The New York State
Conservationist
June-July 1955
State of New York Conservation Department

Haying

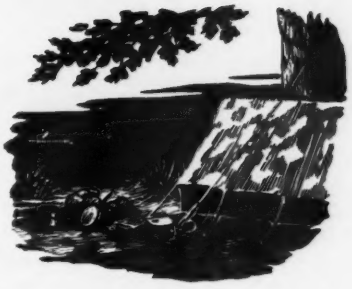
Flash flood

In our last issue. we used this space to advise our readers that we were in the process of publishing a bigger magazine and that subscription rates were about to go up, but that subscribers could get in under the wire at the old price if we heard from them before May 1st.

We heard from them, yes indeed. Between time of notification and the deadline of May 1 there was approximately one week, and in that week our circulation staff received about 30,000 pieces of mail—exactly how many, and how much money was involved we still don't know—we don't have a staff big enough to man the dikes against such a flash flood. But we do know that at least half of the subscriptions were for more than one year (which saves the subscriber trouble and money, and us the time and expense of checking and revising his plate in our files). Top honors in this field go to a gentleman from Gloversville who, in a burst of enthusiasm, generosity and supreme confidence in both himself, and us, renewed his subscription for fifty years. We wish him well, but don't expect to be around to handle his next renewal.

Even more gratifying (to us at least) were the letters from people who wrote expressing their appreciation of the magazine and their approval of our decision to increase its size and price. They didn't have to write these letters, but they wrote them by the hundred. Also, with only one exception that we know of, newspapers throughout the State not only supported us but gave us a helping hand. We appreciate this kind of support more than we can say; in fact, all we can say is thank you very much indeed.

Now, of course, it is up to us to produce a magazine which will not only justify but sustain and increase this confidence. Our conviction that we will be able to do this is based on the fact that we have very knowledgeable writers and artists to draw upon, and also on the fact that we publish information which is not available anywhere else.—Editor



The New York State
Conservationist

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Taming the Crooked River

by David G. Unger, *Executive Secretary, Upper Susquehanna Watershed Association, Norwich*

BACK a few years, a Cortland County farmer cut hay from a river-bottom field in the fertile Tioghnioga Valley. It looked fine even 'though it had had a bath when the unpredictable stream flooded in late July. So it was baled and put in the barn with hay from other fields.

That Winter, this farmer's cattle began to weaken and fall sick. After one cow died, the farmer called in a veterinarian to perform an autopsy in hopes of finding out what was happening. The Vet. found the cow's stomach full of silt and couldn't understand how it had gotten there.

Then the farmer remembered the Summer flood. He quickly looked over the hay he had been feeding his cattle and found it coated with silt from the river! A hundred tons had to be treated with molasses and hot water, and still it was not much good.

Now let's journey down to Broome County. Decaying farm buildings and weed-filled fields bear mute testimony to the problem of land abandonment in this county—where only 3.3 per cent of the land is best-suited to agriculture. Factory workers from heavily-industrialized Binghamton, Endicott and Johnson City buy worn-out farms in the country — "hundred-acre building lots." the Broome County Rural Policy Committee calls them. With the homes used as residences, the land lies idle. Tax-paid services must be provided, but the tired land is not producing and no taxes are forthcoming from it.

And now let's look at the tiny Village of Mt. Upton, in Chenango County, as it was in 1952. It was then that local residents were told about the $19,000,000 flood-control dam to be built by the U. S. Army Engineers on the Unadilla River. At flood stage, 5,700 acres of their most valuable farming land would be submerged. Experts estimated consequent income loss to agriculture and business in the area at $3,000,000 annually.

Reaction to this news was swift and a Citizen's Committee to Oppose the Mt. Upton Dam was organized. The vigorous fight of this Committee succeeded not only in defeating the project but in stirring up State-wide interest as well.

But people still asked: "What about flood control? How are we going to achieve it?"

For in the valley of the Susquehanna River, flood control is a serious issue. Still vividly recalled are the catastrophic flood of 1935 that snuffed out 43 lives and caused damages of $40,000,000 and the 1936 flood that followed it. In addition, sporadic flash floods and incessant erosion tear out roads and bridges, slow up Spring planting, spoil fishing and clog water supply intakes. These annual damages in terms of dollars and cents are unestimated.

The silted hay, abandoned farms and flood control controversy are not as unconnected as might seem at first glance. Rather, they are all symptoms of a malignant cancer that strikes every man, woman and child. The name of this cancer? *Misuse of natural resources.*

Two years ago, a band of people set to work in the area drained by South-Central New York's Susquehanna River to develop a cure for their local resource cancer. The result of their work: A brand-new and unique kind of conservation organization, named the Upper Susquehanna Watershed Association. A private agency, it differs from scores of other conservation groups because: (1) Local people run it (and finance it), (2) it works on *every* conservation problem involving *every* resource, and (3) it operates on a *watershed* basis, a watershed being the most natural unit in which to pursue an effective conservation program.

USWA promotes conservation practices that develop the soil itself as a natural reservoir of water. Measures such as contour strip cropping, pasture improvement, farm ponds, forestry management and reforestation are encouraged along with fish and wildlife habitat improvement and abatement of pollution.

The benefits? Higher farm income, better hunting and fishing, flood prevention, higher wholesale and retail business income, improved drinking and industrial water and a healthier, happier community are some of the results of proper land- and water-use.

How USWA came into being is a first-rate example of American grass-roots initiative. Let's trace its history.

In this 4,800 square-mile oval-shaped chunk of Appalachian uplands, a beautiful countryside, thriving industries and prosperous farms and businesses meet the casual eye. But a closer look at the foundation of this prosperity—the natural resources—unearths the dry rot of misuse.

Pollution, stream bank erosion and siltation have robbed sportsmen of good fishing; bare fencerows and lack of cover have led to poor hunting. As water tables fall and streams flow erratically, community water supplies suffer and dwindle. On many of the Watershed's 15,000 farms, eroded fields and poor pastures produce poor crops. While thick forests once blanketed the hillsides, today only 5 per cent of locally-used lumber is homegrown. The rest is imported from outside areas.

With such problems to face, it seems no wonder that in 1953, pent-up public interest in finding remedies began to break forth. People started getting together. Sportsmen, engineers, bankers and conservation leaders met with farmers and businessmen, gathered facts and figures and studied their watershed problems. As they worked, they found that scores of local, State and Federal agencies, such as the New York Conservation Department, the Flood Control Commission, the Soil Conservation Districts, sportsmen's clubs, the Extension Service, the Soil Conservation Service, the Army Engineers and many others—all were concerned with portions of the conservation picture.

But none of these agencies treated natural resources as one interrelated unit. Local people did not directly control their activities. And since they operated independently, programs conflicted and overlapped.

Other considerations presented themselves, too, such as the facts that every resource problem depends on another, that these problems follow the stream rather than political or artificial boundaries and that everybody, the upstream farmer as well as the downstream urban dweller, is affected.

Searching for a method of organization which would account for all of these factors, the planners invited Clayton M. Hoff, executive vice president of the Brandywine Valley Association of Wilmington, Delaware, into the Watershed for his advice and suggestions. He outlined the brilliant success of locally-led BVA and similar groups in working to awaken people to the need for conservation on a watershed basis.

The question promptly came up? Why

not a similar association for the entire Upper Susquehanna Watershed?

Once the idea was born, it was taken to the people for their reaction. Nine months of public meetings arranged by local Soil Conservation Districts and other interested groups resulted in the formal organization of USWA in February, 1954 as a non-profit educational agency.

Broome, Chenango, Cortland, Otsego and Tioga counties, wholly within the Watershed, each elected three men to serve on a board of directors. Invitations went out to portions of 12 other Watershed counties in New York and Pennsylvania to join up in the future.

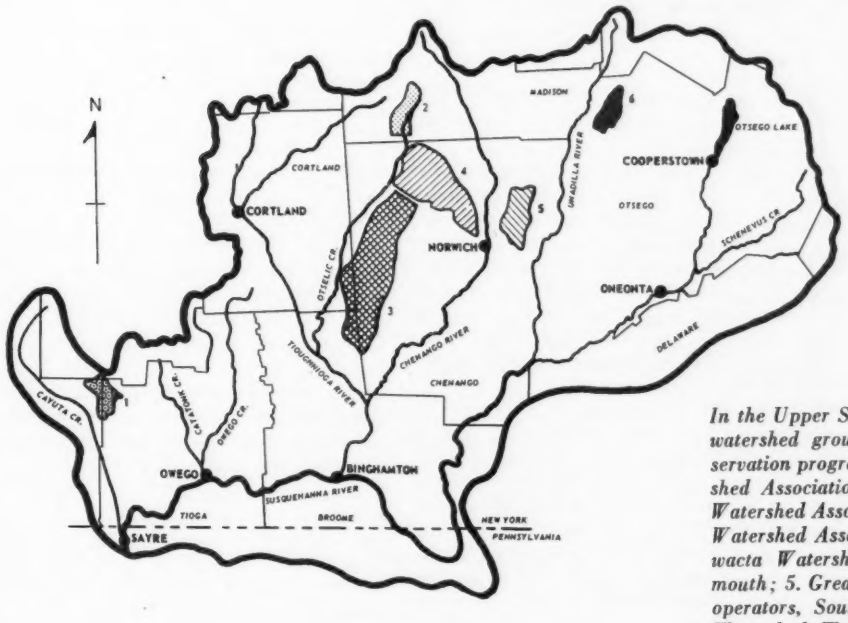
But before describing the Association's progress, let's take a closer look at this region called "The Upper Susquehanna Watershed."

Half a million people live in this area drained by part of the North Branch of the Susquehanna River, the river that early Indians named "The Long, Crooked River." On every side, the Watershed is bounded by mountains and ridges separating it from the Delaware drainage to the southeast, the Mohawk to the north and the Chemung to the west.

The Susquehanna itself rises in the blue waters of Otsego Lake, directly north of Cooperstown. Historians tell us that Indians broke through a dam on the lake every Spring and let the rush of water carry their canoes far down the winding river.

This is the country where Joseph Smith once preached his Mormon prophecies; the country of the renowned Iroquois Indian Federation which has left its mark on the names of practically every river and community—Catatonk, Ouleout, Nanticoke, Cayuta, Owego. The Susquehanna mountains were the backdrop for James Fenimore Cooper's famous "Leather-Stocking Tales" and Theodore Dreiser patterned his novel "An American Tragedy" after a real-life murder of a Cortland girl back in the 1900's.

From the abandoned canals upstream



In the Upper Susqehanna Watershed, six local subwatershed groups are carrying on individual conservation programs. They are: 1. Dean Creek Watershed Association, Spencer; 2. Upper Otselic River Watershed Association, Georgetown; 3. Genegantslet Watershed Association, Smithville Flats; 4. Canasawacta Watershed Conservation Co-operators, Plymouth; 5. Great Brook Watershed Conservation Co-operators, South New Berlin; 6. Wharton Creek Watershed, West Exeter.

USWA promotes reforestation to reclaim thousands of acres of worn-out land, cut soil erosion, boost lumber supplies

Streams shrink to a trickle, after floods pass; sometimes disappear entirely in the Summer

Yearly Spring floods block roads, silt up fields, delay planting upstream

to downriver Sayre, Pennsylvania, where unexplained battlements atop Spanish Hill overlook the junction of the Chemung River with the main stream, we are continually reminded of the bustling history of this valley of jutting hills and many waters.

A look at the Watershed today reveals many industries hammering out their wares. They manufacture fish-lines and corsets, silverware boxes and jet airplane ignition systems, electronic brains, camera film and shoes. Folding chairs, milk chemicals, stomach remedies and ice cream are among scores of products turned out by busy factories in the Valley.

But although Susquehanna industry produces millions of dollars worth of goods annually, agriculture reigns supreme in this rolling countryside. As a local rural development expert recently quipped, "Central New York's largest employer is the dairy cow." A ride through the country confirms this, for we find well over 300,000 cattle grazing the hillsides. Total Watershed farm income topped a whopping $110,000,000 in 1953, according to Sales Management, Inc.

This huge agricultural industry is the mainspring of business in the area. Trading communities in every section of the Watershed owe much of their prosperity to the farm customer.

In looking over this far-flung area, directors of newly-organized USWA came to realize that the greatest need in the Watershed was for a broad and comprehensive educational program, one which would co-ordinate agencies working on conservation and help people find the information they needed.

Setting to work, they hired an executive officer in October, 1954 and gave him the responsibility of developing such a program. A committee began raising $10,000 from private individuals and concerns to finance USWA's first fiscal year.

Today, the Association has nine months under its belt. What does the scoreboard show regarding progress? How far has USWA gone toward achieving its long-range goals of (1) a watershed association on every small stream, (2) a complete conservation plan on every farm, (3) good forestry management for every woodland, (4) clean waters in every stream and (5) a more beautiful valley for all?

First, it has established a far-reaching policy under which it offers services to watershed associations working on small sub-watersheds within the Upper Susquehanna area. Six such groups already exist, the Dean Creek Watershed Association at Spencer, the Genegantslet Watershed Association, Smithville Flats, the Upper Otselic River Watershed Association, Georgetown, the Great Brook Watershed Conservation Co-operators, South New Berlin, the Canasawacta Watershed Conservation Co-operators, Plymouth and a group working on Wharton Creek near West Exeter.

In January, USWA helped the Genegantselt and Canasawacta associations apply for Federal assistance under the recently-passed Watershed Protection and Flood Prevention Act. These applications set forth ambitious programs including not only flood protection, but also prevention of soil erosion and siltation, improvement of recreational facilities and enhancement of hunting and fishing.

USWA has also helped develop several special conservation projects. This Spring, eleven Troops of Boy Scouts in Chenango County spent a day in the Great Brook Watershed planting stream banks, seeding farm pond dikes and gullies and planting wildlife shrubs. This was the result of six-way teamwork between USWA, the Boy Scout Committee, the Conservation Department, the U. S. Forest Service, the Soil Conservation Service and the local watershed association.

In another co-operative activity, Norwich's Iroquois Sportsmen's Club is fencing woodlots and planting stream banks in the Canasawacta Watershed.

Educationally, great strides have been taken. With the help of the Brandywine Valley Association, a special color slide talk has been prepared and is currently being presented to four groups every week. A main spoke in USWA's educational wheel, this talk is given without charge to any group in the Watershed and takes erosion, floods, water shortages, pollution and other problems right into the meeting room.

News articles are distributed regularly to 60 newspapers and radio stations and a weekly radio program in one country is spearheading future radio coverage of the entire area. An annual meeting this Fall will highlight progress and premiere a brand-new slide talk.

In the making are fair exhibits and window displays to illustrate graphically the what, why and how of watershed conservation. To keep members up-to-date on watershed happenings, the first issue of a quarterly newsletter, "Watershed Roundup," has just been published.

Membership in USWA is rapidly growing. Already over 180 individuals, businesses and industries have allied themselves with this effort to replace misuse with wise use, poverty with prosperity and confusion with co-operation.

How about the future? USWA plans first to expand publicity efforts. A special series of news articles will tell the public how to get its tax dollar's worth from conservation agencies. To reach as many people as possible, television shows and meetings on particular conservation subjects will be used.

And in a long-range work plan, several major objectives are set forth. They include:

1. Determination and publication of land-use needs and goals; 2. a complete land and water-use survey on a sub-watershed basis; 3. a water-use survey to find out just how much water communities and industries are using—and where it is to come from in the future.

In every one of these activities, USWA hopes to enlist co-operation from all interested people and groups. For it is an agency through which everybody can work together toward common objectives.

In this way, the Upper Susquehanna Watershed Association plans to make teamwork tame "The Long, Crooked River."

The Department's Program

To Harden Pheasants

THE wisdom of continuing the Department's pheasant propagation and stocking program in its present form has been seriously questioned in recent years. As a consequence, the funds allotted for this program, the production quotas, techniques of rearing and distribution have varied rather widely as administrators have sought a reasonable balance between biological soundness, available funds and the demands of pheasant hunters—who hold that stocking should be continued or discontinued, increased or decreased—or in any case modified in some manner so as to yield a greater return.

Since pheasant propagation continues to absorb a substantial portion of conservation funds allocated to wildlife work in New York, the Department now wishes to re-examine the current pheasant rearing and stocking program and obtain the most accurate measurement possible of the returns from such expenditures. Furthermore, the Department is interested in trying a different technique of conditioning birds prior to release so that wilder, hardier birds can be liberated just prior to the open season. This may result in increased hunter satisfaction in proportion to funds expended.

A test study is being organized this year to determine the relative economy, and satisfaction of returns to hunters, of birds from (a) pheasants held to maturity under semi-wild conditions, and liberated just prior to the hunting season, (b) pheasants held to maturity under game farm conditions, and (c) half grown birds field reared on the game farms and liberated in Summer as in past years.

Grenadier Island, in the eastern end of Lake Ontario, has been secured for the purpose of rearing and hardening the pheasants under semi-wild conditions. Half grown pheasants will be released on the island to roam at will entirely on their own except for whatever supplemental feeding may be necessary. They will be trapped up just prior to the hunting season for stocking in the area where the several groups of birds are to be tested.

This study is to be conducted on a large block of land located in the excellent pheasant range of the Lake Plains. The several groups of test birds will be stocked on the study area in approximately equal numbers. Only cock birds are to be used and all will be distinctively banded so that each test group can be identified. All cock birds reared and released by sportsmen and 4-H Club co-operators within the study area are also to be banded distinctively so that their contribution to hunter returns can be fairly evaluated along with those distributed by the State.

Since the area selected for this study is too large to surround by checking stations, other means of obtaining hunter returns and kill ratios from the various groups of test birds will be used. Detachments of Department personnel will constitute roving patrols to check game bags. Our aim will be to get as complete a check on pheasant returns within the study area as is possible. In addition it is planned to use postcard questionnaires distributed to hunters and residents within the area, as well as general publicity directed toward increasing voluntary reporting of banded and unbanded pheasants. Final evaluation will be on the basis of relative hunting returns from the various groups of test birds compared to the relative costs for each group. Observations by hunters on the comparative sporting quality of the birds brought to bag will also be tabulated for consideration.

The results of this study should provide the Department with valuable information on which to base modifications in the pheasant propagation and stocking program. It is good business to examine critically any program in terms of values received. Feeling that this type of study is sound, and could be appropriately supported by Federal Aid, the Department approached the Fish and Wildlife Service to obtain approval to conduct this study as a Pittman-Robertson research project. The Service has given its approval on the basis of sharing production costs on the birds reared under semi-wild conditions the first year, banding costs on all birds going into the experiment, and costs of research personnel responsible.

To Harden Trout

IN recent years production of large-sized brook and brown trout has been increased. But it should be realized that rearing of trout to legal size (seven inches, with some exceptions) for Spring stocking involves carrying them more than one year. Thus, expansion in this direction has been expensive; large trout require more hatchery space, more food, more labor.

Under the increasing pressure of angling in relation to productive capacity of streams, many sportsmen view the stocking of large, ready-to-catch trout as the most practical solution to the problem of improving trout fishing. The expense of rearing large trout necessitates not only careful use of them, through up-to-date revision of fish stocking policy, but also the rearing of fish of satisfactory quality for immediate recapture or survival over a longer period.

A study being organized as a part of the Department's Dingell-Johnson program will test the hardiness, appearance and capacity to survive of brook trout and brown trout in order to discover and develop practical techniques of rearing trout so as to harden and condition for more satisfactory angling.

Perhaps the most readily apparent short-coming of many recently-planted trout is that of appearance. The lack of the bright red spots or rich background coloration normal for wild trout is frequently noticed in recently-stocked waters, and most anglers, we believe, would prefer to catch highly-colored trout. Through feeding experiments, biologists have done much of the basic work necessary to understanding the principles of coloration. What needs to be done now is to apply such information to develop the most economical and practical methods for special trout diets for a conditioning period.

A comment sometimes made by sportsmen is that recently-planted trout tend to be soft or "pot-bellied." Even 'though fish hatcheries must necessarily operate economically in the use of available water supply, it is possible to give an increased flow by drawing ponds down more shallow, or to exercise trout by temporarily increasing the flow. Thorough tests of hardening trout prior to planting will seek to develop a practical hatchery routine for making trout more fit to make the transition from raceway or pond to fast water of streams.

As a part of the project, trout will be put out to forage on natural food and to learn to escape natural hazards in several controlled waters on hatchery properties. These fish will be useful for comparative testing of trout conditioned by various methods. The first year of the project will be largely devoted to developing techniques and in running short term tests on segregated lots of fish at several hatcheries. Next year a detailed program of testing conditioned trout in several fishing streams will be started, since the most important tests must be made under actual survival conditions in wild waters.

Using the Cornell Tool

To Kill with Chemicals

EVERY woodlot and forest plantation includes trees that, for one reason or another, should be eliminated. Some of these will be cut and removed for commercial purposes; others need only to be deadened, to remove their influence from the stand. Whatever the objective, the old method was to do such work with axe and saw, but this is both laborious and costly. Furthermore, hardwoods cut during the dormant season will sprout or sucker, so that, presently, we have to cut the same tree down all over again.

Of late years, we have developed the use of chemicals to deaden trees quicker, easier, more cheaply, more surely. Just how we will perform such work will depend on our purpose, on the kind of tree to be treated and on the season of the year.

For all sizes of both hardwoods and softwoods the injection of an adequate dose of *sodium arsenite* into the sap stream of the tree is the quickest and deadliest treatment we know of. There are several tools for getting the chemical in. For hardwoods 5 inches or less in diameter, a basal spray of the plant hormone 245-T gives a cheap, easy but slow kill. Basal spray is not applicable to bigger hardwoods because of the large volume required—better use arsenite. Nor is it suitable for conifers, because their corky bark absorbs too much, runs the cost up—again, do it cheaper with arsenite.

The following table will help you decide what technique to apply to your own particular problem:

JUST TO KILL TREES:

Hardwoods

With a minimum of sprouting:

Easily but slowly: Basal spray with 245-T—July to snowfall

Harder but quicker: Arsenite in Cornell Tool, overlapping basal jabs—August to December

With some sprouting:

Arsenite in Cornell Tool, cuts not overlapped—June to March

Arsenite in axe frills at waist high—June to March

Swaintabs when the trees are in full leaf

Softwoods

Hard way: Arsenite in Cornell Tool, cuts not overlapped—year around, except in snowy season

Easier and cheaper: Arsenite in axe frills at waist high—year around, except in snowy season

Easier but more expensive: Swaintabs, year around, but best in sap peeling season

TO LOOSEN THE BARK, TOO:
("Chemi-peeling")

Hardwoods

Over 5″ except white ash—Chemi-peel, June to early August

Softwoods

Large—over 8″: Chemi-peel, June to early August

Small—under 8″: Axe frill plus arsenite, June to early August

Basal Spray means the thorough wetting (to the point of run-down) of the bottom 6-10 inches of stem with a 4 per cent solution of 245-T in kerosene. See page 23 of THE CONSERVATIONIST for June-July, 1952.

The *Cornell Tool* is a length of pipe with the lower end flanged out and sharpened, to form a cutting edge. When jabbed into the tree trunk, it makes an incision through the bark and a spring-loaded valve automatically releases the required amount of arsenite from the handle, to fill the cut. Tools can be obtained from Mr. Arthur Annis, whose address is Cherry Creek, New York.

Axe Frills are simply series of overlapping cuts. Arsenite is applied.

Chemi-peeling involves the removal of a girdle of bark 4 inches or more wide and the painting of the freshly exposed wood with a solution of sodium arsenite. We recommend the use of a ready-mixed solution, which will have both a dye and a smelly deer repellant. See pages 10-11 in THE CONSERVATIONIST for December-January, 1952-1953.

Swaintabs are something new. Because liquids are always messy to handle, Prof. L. C. Swain of the University of New Hampshire has developed a paper tab saturated with sodium arsenite which will, when inserted in a slit under the bark, bring fairly prompt death. Swaintabs are unquestionably the best way for the small operator to do plantation thinning. See page 13 of the NORTHEASTERN LOGGER for October, 1954.

For killing trees, whether they are to be salvaged or not, the cheapest and most effective compound is sodium arsenite. Get enough of it into the sap stream at the right season and prompt death will ensue. Basal spray is less laborious, much slower—but very effective. Each should be used in its proper place and season, with due regard for the costs of labor and chemicals, and for the objective of the work. Both offer opportunity to perform much needed plantation thinning and forest stand improvement work cheaper and more effectively than ever before.

—DAVID B. COOK

Applying a Swaintab

Marked Fish

by Dwight A. Webster,

Department of Conservation, Cornell

THE tagging and the fin-clipping of fish are means of marking them so that they may be recognized at some future time. Fisheries biologists, concerned with learning more about the ways of fish and improving, thereby, fisheries management practices, may have any one of three primary objectives in view when they so mark and release fish: (1) Later recapture tells a story of where and how the fish travel; (2) marking provides information concerning the identity (the degree of separation or mixing) of populations of fish, and (3) it contributes valuable information on population levels, rate of exploitation, survival, growth and similar vital statistics contributing to the dynamic features of fishery management.

For some purposes, the same mark may be used for a whole group of fish. Here, fin-clipping is most useful; removal of one fin or a combination of fins makes it possible to identify a limited number of *groups* of fish—say, a batch of fingerlings planted in a pond at a certain time. (In the accompanying picture, the large arrow denotes the former position of the adipose fin which was clipped from this brook trout a year earlier.) Moreover, fin-clipping is a fast and inexpensive means of marking fish; experienced markers can handle 500 to 1,000 fish an hour, depending on the species, size and mark.

But there are certain disadvantages in the fin clipping method of marking. For one thing, the fins may regenerate or grow back (see THE CONSERVATIONIST, A-M, 1955). This depends a good deal on the fin involved. The adipose fin, for example, shows virtually no tendency to regenerate, while the belly or ventral fins show considerable tendency to do so. But even 'though the clipped fin may grow back, there is usually some deformity and recognition is still possible—at least by trained personnel.

Other methods of mass marking which have served or could serve specialized purposes consist of feeding the fish an X-ray opaque material, or of including a vital dye in the diet of the fish which stains the bones pink. And it is sometimes possible to dye the fish externally.

Tagging, however, is the most conspicuous means of marking fish. Here a small object is attached to the fish, thus providing something the fisherman can get his hands on and return to the proper agency designated on the tag. Another value of a tag is that it carries a serial number which makes it possible to individually identify a large number of fish. But hanging a chunk of metal or plastic onto a streamlined fish presents problems, and selection of a fish tag is based on the species of fish to be marked, holding qualities of the tag, conspicuousness, degree of irritation or inconvenience to the fish, and expense and ease of application. These factors vary in importance depending on circumstances; a tag that may be adequate for one situation may be worthless in another. Some of the major types of tags currently in use are illustrated on the photograph of the "comprehensively tagged brook trout" which accompanies this article.

Now as to kinds and usefulness of information provided by fish marking:

Data bearing on migrations or movements are easily interpreted. The homing nature of Atlantic and Pacific salmon, for example, has passed from theory to fact, based on evidence from marking studies. Young salmon have been marked as they descended from the fresh-water nursery streams, recaptured far at sea, and then associated with their parent or home stream again at maturity. And tagging of lake and rainbow trout in the Finger Lakes indicates widespread wandering within the lake from the area of release. By contrast, however, some species appear to be fairly sedentary in their habits.

The identification or separation of populations is an important phase of fish management: Is a fishery drawing upon a generalized or a localized stock of fish? The answer to this question is often vital in the regulation and management of marine species which may occur over a wide range of coastal waters. Sometimes the populations occur as isolated stocks inhabiting ocean banks and not intermingling with neighbors, as in the case of the Pacific halibut. An example of the same sort of situation in freshwater is found in the Department's Lake Ontario smallmouth bass study (THE CONSERVATIONIST, J-J, 1949). And in other instances, the marking of fish has shown that populations which have separate breeding grounds may congregate in common feeding areas or migration routes (striped bass, shad, salmon, etc.).

Another use of fish marking is as a means of obtaining information on the exploitation of a fishery: Who takes how many; when, where, what age and size? Related to this are the actual estimations of the population size and even its survival rate. In the modern concept of fishery biology and management, evidence bearing on these vital statistics is often essential.

The general way in which this information accumulates is as follows: A known number of marked fish is released into the population; subsequent sampling (by anglers or biologists) then yields marked and unmarked fish; the percentage of marked fish recovered gives a measure of the degree of utilization or exploitation by the fishery. Under favorable circumstances it may also be possible to estimate the size of the fish population by proportional computations.

It becomes evident that the success of most tagging programs is usually contingent upon the co-operation of fishermen. Keep the fish, but send in the tag (or tag number). (The writer once placed some experimental tags which read, in part, "*Send to Cornell University.*" A few loyal co-operators took the instructions literally, boxed up the fish with tag still attached. Needless to say these packages always cleared through the University mail room in record time!)

Sometimes the return of tags takes devious courses. An account was recently published of two tag returns from sockeye salmon released in British Columbia. The salmon and tags turned up in England—in cans.

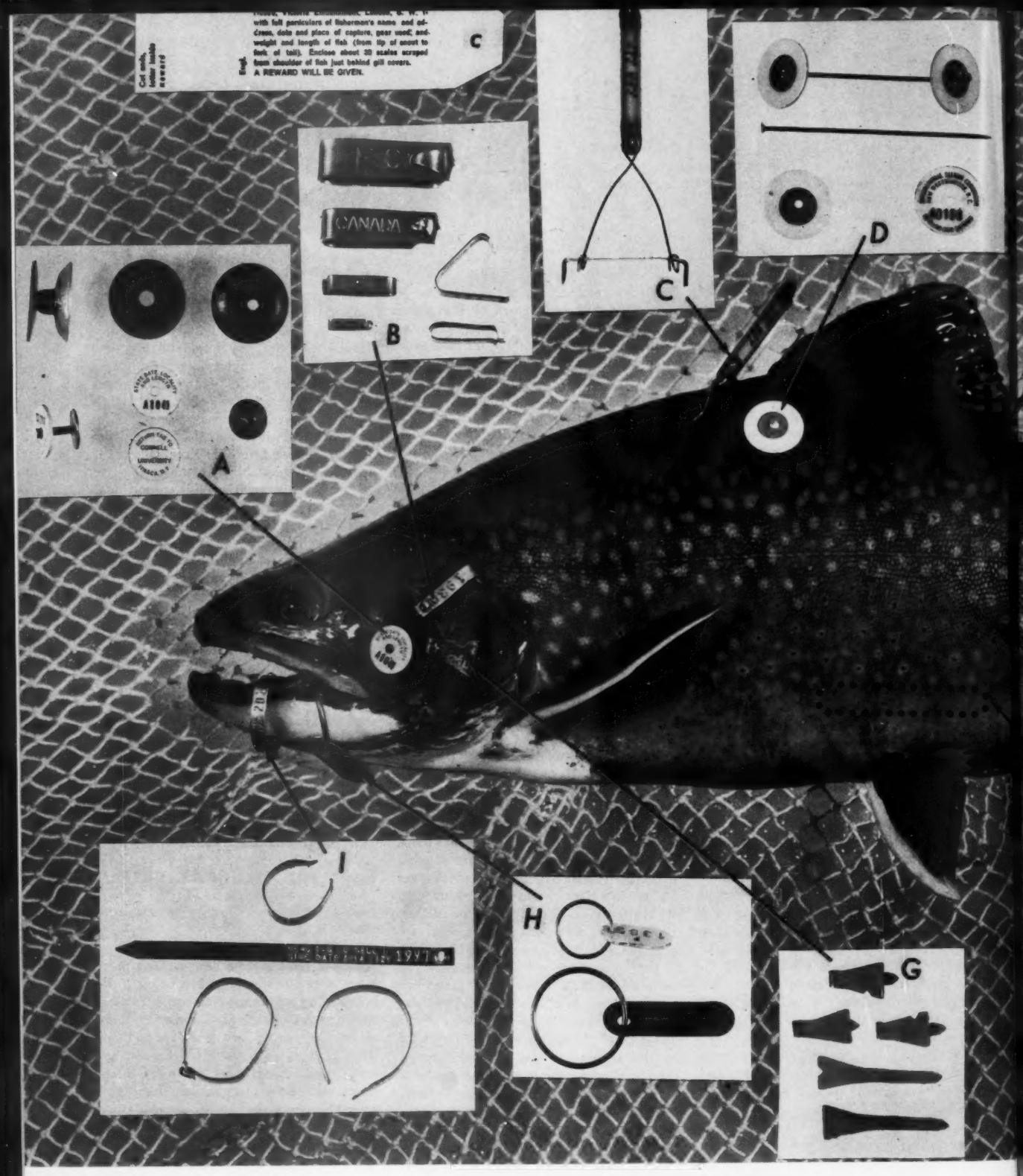
Returns from Marking

—C. W. GREENE,
District Fisheries manager

A FEW returns from fish marking projects are briefly described below to illustrate the information we are acquiring on longevity, growth rate, and migrations of fish by use of the marking method. Most of these are unusual records, selected because extremes are more interesting and easier to remember than averages. It should be borne in mind that variability is great both among different species of fish and among individuals of the same species with regard to factors of life history and habits.

1. A male Chautauqua muskalonge was tagged April 19, 1946 at Arnold Bay, Chautauqua Lake. It was caught in October, 1947 by an angler in the Allegheny River at Tionesta, Penn-

(Continued on page 10)


with full particulars of fisherman's name and address, date and place of capture, gear used, and weight and length of fish (from tip of snout to fork of tail). Enclose about 20 scales scraped from shoulder of fish just behind gill covers.
A REWARD WILL BE GIVEN.
C
CANADA
B
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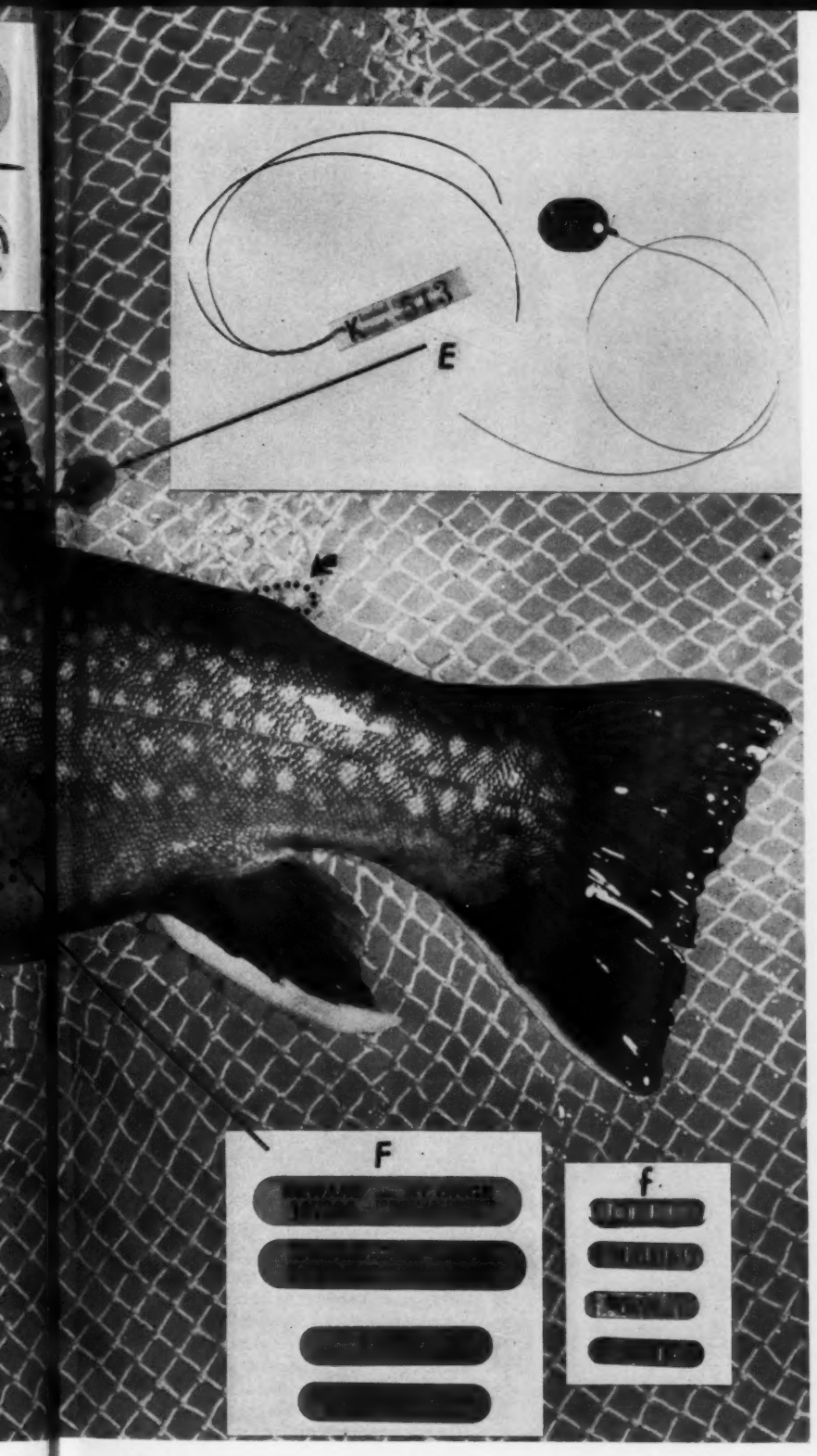
Methods of Tagging Fish

A. *Bachelor Button:* Plastic disc and rivet of non-corrosive metal. Tag is attached with specially designed pliers to the opercle (cheek) bone. In many species, wear under head of rivet causes eventual loss although



tag gives good results on common whitefish. This style is easily tangled with nets.

B. *Strap:* Adaptation of the cattle ear tag, and formerly widely used. Gives poor results when clamped to edge of gill cover in lightly boned fishes; quickly wears through. For short term experiments this tag and placement is frequently useful, however. One of most successful applications as illustrated was on Pacific halibut by the International Fisheries Commission. New York biologists have used this tag attached to the base of the leading edge of the dorsal (top) fin in muskalonge and lake trout.

C. *Hydrostatic:* A colored plastic tube sealed off at each end. Weight of the tag is counterbalanced by the buoyancy produced by the entrapped air. Sometimes attached by the bridle arrangement shown, or by a cliplike arrangement to the gill cover, or as a pennant (see E below). Advantages over other types of tags are still uncertain. It is expensive, but has the advantage of permitting detailed instruction on the message (c) enclosed in the tube, sometimes in many languages.

D. *Petersen:* Two plastic discs joined by non-corrosive pin, wire, or nylon. Tag is widely used on marine species, but has given poor results on some freshwater species. Sample depicted is used in British Columbia sockeye salmon studies, the red bulls-eye rendering the fish more conspicuous in the shallow water of the spawning grounds.

E. *Pennant:* Pennant consists of plastic or plastic impregnated paper (Swedish tag at left) although earlier, silver plates were used. Attachment is in skin at base of dorsal fin (either before or behind as shown).

F. *Body Cavity:* Narrow incision is made in side of abdominal wall and colored plastic tag is inserted into body cavity. Once incision heals (it does so rapidly) fish carries tag for life. Tags can be recovered only as fish are cleaned, which offers limitations to use. Tag can be placed on small fish and does not present external obstructions. Ingenious modification consists of using metal in place of plastic and employing electro-magnetic devices to detect presence of tag as fish run over a conveyer belt into the processing plants (herring). One weakness of this type of tag is that if the material used is too rigid it tends to wear through the body wall.

G. *Opercle Clip:* Plastic clip is slipped onto gill cover at line of flexibility where it is held by friction. A specialized tag for short term experiments. Designed to determine proportion of smelt taken in spawning runs at the mouth of a New Brunswick River, and for any one group fishing extended over only a few days. Note that by varying the shape of flap and using code punches on margin, lots of fish tagged on different days or in different areas can be identified.

H. *Mandible Ring and Pennant:* Split metal ring slips around the lower jaw or mandible, while the plastic pennant carries the identifying number and instructions. A new and fairly expensive tag.

I. *Mandible or "Jaw" Tag:* Of monel metal, is probably the best all-around tag yet devised for many freshwater fish. Does not require specialized technique for application and tag is inexpensive. Lower jaw is heavy bone which does not wear readily in many species. Under favorable conditions there appears to be no impairment of feeding and growth. *This tag is currently used in Department and Cornell tagging studies. Anglers please note and return tags with information on date, locality and size to agencies indicated on tag.*

(Continued from page 7)

sylvania, a distance of about 70 miles from the tagging point. (A few other male muskalonge tagged in Chautauqua Lake have been recovered downstream but, to date, no record has been obtained of a female 'longe leaving the lake.)

2. A female Chautauqua muskalonge was tagged on the dorsal fin, May 5, 1930, near Prendergast Point, Chautauqua Lake. This was one of a very few muskalonge tagged for the specific purpose of obtaining information on migration. It was in the 10- to 20-pound class but exact size and age at the time of tagging are unknown. The fish was recaptured April 19, 1946 about ¼ mile from the original tagging point. It was 50½ inches in length when recaptured.

Considering size at original capture, there is no doubt that this fish was over twenty years old when captured. Among other things, history of this tag illustrates the value of making complete and exact records of fish tagged, whenever that is possible.

3. On October 4, 1945, a male lake trout, 28¼ inches long, weighing 6 pounds, 8 ounces and aged at seven winters was tagged at Peach Orchard Point, Seneca Lake. This fish was caught by an angler on April 3, 1955 at Glass Factory Bay near Geneva. When caught it was 40 inches long, weighed 22 pounds and had survived 17 winters.

4. On March 16, 1954, a female rainbow trout, length 26 inches, weight 6½ pounds, was tagged in Catharine Creek just above the Village of Montour Falls. This fish was caught May 7, 1954, off the Geneva Pumping Station. It had used just 22 days to travel down Catharine Creek and the length of Seneca Lake, a distance of about 40 miles.

5. A twelve-year-old female smallmouth bass (length 17½ inches, weight 2 pounds, 11 ounces) was tagged at the foot of Eel Bay, St. Lawrence River on June 7, 1948 This bass was caught by an angler five years later and length and weight were reported then to be 18½ inches, 3½ pounds.

From the Ontario-St. Lawrence bass tagging, several records of 14- and 15-year-old bass were secured, but beyond that age, only one sixteen years old and the one here reported as seventeen.

6. Information on longevity of stocked brook trout has been obtained through fin-clipping of all such species stocked in Stillwater Pond, Putnam County, through the period of 1946-1953. Since this pond was drained and an attempt made to eradicate all fish there in 1952, however, only those trout stocked as fingerlings in the years 1946-1948 were given the opportunity of living through four winters before harvesting.

Of the 17,500 brook trout fingerlings stocked during that three-year period, only one was recovered as a four-year-old. Thirty-eight were recovered as three-year-olds, 1,066 as two-year-olds and 4,678 as yearlings. These figures represent a measure of the catch, not of total survival. The brook trout is a short-lived fish. Nevertheless, in evaluating these figures, allowance should be made for the fact that temperatures and chemical conditions in this pond are somewhat unfavorable for trout. Survival into the third and fourth years should be somewhat better in a pond with more favorable physical and chemical conditions.

MARKED FISH IN NEW YORK

Water	County	Species	Mark*
		WESTERN DISTRICT	
Seneca Lake	Ontario, Seneca, Yates Schuyler	Lake Trout	Tag, dorsal fin or jaw; fin clip
Canandaigua Lake	Ontario, Yates	Lake Trout	Fin clip
Cayuga Lake	Seneca, Cayuga, Tompkins	Lake trout, bass, rainbow trout	Tag, fin clip
Seneca Lake-Catharine Creek	Schuyler	Rainbow trout	Tag
Canandaigua Lake-Naples Creek	Ontario	Rainbow trout	Tag, fin clip
Keuka Lake-Cold Brook	Steuben	Rainbow trout	Tag
Chautauqua Creek	Chautauqua	Rainbow trout	Fin clip
Cetka Creek	Monroe	Brown trout	Fin clip
Chautauqua Lake	Chautauqua	Muskalonge	Tag, dorsal fin
Lake Erie**	Chautauqua, Erie	Pikeperch, blue pike, yellow perch, white bass, catfish, bullheads	Tag
		ONTARIO-ST. LAWRENCE DISTRICT	
Lake Ontario	Jefferson	Smallmouth bass	Tag
St.Lawrence River	St.Lawrence, Jefferson	Smallmouth bass	Tag, fin clip
Pleasant Lake	St.Lawrence	Smallmouth bass	Fin clip
Kondaxe Lake	Herkimer	Smallmouth bass	Fin clip
North Sandy Pond	Oswego	Northern Pike	Tag, dorsal fin or jaw
Black Lake	St. Lawrence	Northern Pike	Tag
Pleasant Lake	St. Lawrence	Northern Pike	Tag
Black Lake	St. Lawrence	Pikeperch	Tag
St.Lawrence River	St. Lawrence	Pikeperch	Tag
Pleasant Lake	Jefferson	Pikeperch	Fin clip
Hyde Lake	Jefferson	Pikeperch	Fin clip
Lake Ontario	Jefferson	Lake trout	Fin clip
Sylvia Lake	St. Lawrence	Lake trout	Fin clip
Big Moose Lake	Herkimer	Lake, brook, rainbow trout, salmon	Fin clip
Moose River	Lewis, Oneida, Herkimer	Brook, rainbow trout	Fin clip
		ADIRONDACK DISTRICT	
Friends Lake	Warren	Pikeperch, northern pike	Tag
Indian Lake	Hamilton	Northern pike	Tag
Lower Saranac Lake	Franklin	Northern pike	Tag
Lake Pleasant	Hamilton	Pikeperch	Tag
Sacandaga Lake	Hamilton	Pikeperch	Tag
Clear Pond	Essex	Salmon	Tag
Eagle Lake	Essex	Salmon, whitefish	Tag, fin clip
Lake George	Essex, Warren	Salmon	Tag, fin clip
Schroon Lake	Essex, Warren	Salmon	Tag
Ausable River-Lake Champlain	Essex	Smallmouth bass	Tag
Blue Mountain Lake	Hamilton	Smallmouth bass	Tag
Garnet Lake	Warren	Smallmouth bass	Fin clip
Harrisburg Lake	Warren	Smallmouth bass	Fin clip
Lake Luzerne	Warren	Smallmouth bass	Fin clip
Kondaxe Lake	Herkimer	Smallmouth bass	Fin clip
Lincoln Pond	Essex	Smallmouth bass	Tag
Osgood Pond	Franklin	Smallmouth bass	Fin clip
Raquette Lake	Hamilton	Lake trout	Tag, fin clip
Silver Lake	Clinton	Lake trout	Fin clip
Upper Saranac Lake	Franklin	Lake trout	Fin clip
Boquet River	Essex	Brown trout	Tag
Hudson River vic. North River	Warren	Brown trout	Tag
Sacandaga R., Wells-Speculator	Hamilton	Brown trout	Tag
Bone Pond	Franklin	Brook trout	Fin clip
Cherry Patch Pond	Essex	Brook trout	Fin clip
E. Pine Pond	Franklin	Brook trout	Fin clip
Grass Pond	Franklin	Brook trout	Fin clip
Mountain Pond	Franklin	Brook trout	Fin clip
		CENTRAL DISTRICT	
Otsego Lake	Otsego	Lake trout	Fin clip
Skaneateles Lake	Cayuga, Cortland & Onondaga	Rainbow trout	Fin clip
Trout Brook-Skaneateles Lake	Cortland	Rainbow trout	Tag
Lebanon Res.	Madison	Brook, rainbow trout	Fin clip
Canegantslet Creek	Chenango	Brown trout	Fin clip
Oneida Lake	Oneida, Madison, Onondaga, Oswego	Pikeperch, smallmouth bass	Tag
		SOUTHERN DISTRICT	
Oakland Lake	Queens	Brown trout	Tag, pin and disk or fin clip
Glenida Lake	Putnam	Rainbow trout	Tag
Stillwater Pond	Putnam	Brook trout	Fin clip

*Unless otherwise specified, "Tag" means jaw tag.
** Cooperative projects of States of Ohio, Pennsylvania and Province of Ontario

Throughout the year—but especially during the Summer months, the Conservation Department receives a large number of inquiries about the "approved method" for the control of all sorts of aquatic vegetation. These inquiries come from property owners with lakeshore holdings, farmers with farm ponds and muskrat marshes, fishermen with favorite fishing spots, duck hunters with secret ducking grounds—and many others. But all these people have one thing in common: They resent the intrusion of a great variety of fresh-water plants into lakes and ponds and rivers where the rapid growth of these plants makes swimming and boating impossible, fishing and ducking very difficult, and the general environment unpleasant. These people want to know what they can do about all this.

We have no ready answer. But we and other public agencies are working on this problem—which we all admit to be serious—and hope eventually to come up with the answer. We must emphasize, however, that to the best of our knowledge nobody has the complete answer *now*.

Following are excerpts from a paper on this subject delivered by J. D. Gould, Aquatic Biologist of this Department, at the 9th annual Northeastern Weed Control Conference held in New York City in January.

Control of Water Weeds

THE present status of aquatic weed control might best be described by a phrase borrowed from the modern teenager: "It's a crazy mixed up mess!" For many years things were quiet on the aquatic weed front. The back-breaking method was widely used. This is the method whereby the weeds are either uprooted by hand, or dragged from the pond by means of chains, wires or rakes. It was a good method then and is a good method today for controlling weeds on small areas. However, present day labor costs make it too expensive for any but the smallest infestations. Copper sulphate was widely used as an aquatic algicide and sodium arsenite was used to kill some emergent and submerged aquatic plants.

The discovery of 2,4-D and similar compounds during World War II opened up a new era in terrestrial weed control, and will undoubtedly do the same for aquatic weed control. Certainly chemical control of aquatics is being and will be extensively investigated. Results of a questionnaire sent to about thirty people in the Northeast indicate that over twenty chemical compounds are under test, on over twenty different species of aquatic vegetation.

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Before we leave the "mixed up" present and discuss the future, let us consider the need for a method of aquatic weed control. Are these weeds causing enough damage to warrant a genuine need for a method of control? The answer is, yes! Here are some of the reasons I believe we need an effective method of aquatic weed control.

In the first place the sportsmen of this country spend fantastic amounts of money each year in pursuit of their hobbies. It was recently estimated that the sportsmen of Massachusetts spend $74 million a year. They spend money for gas, oil, licenses, tackle, arms, ammunition, boats, lodging, food, clothing, etc. If this figure is anywhere near representative, it would take only a very small annual loss caused by aquatic weeds to run into considerable money.

In the second place we have a few estimates of the dollar loss caused by aquatic weeds. The Fish and Wildlife Service estimates that the annual loss to fish and wildlife due to the water chestnut in the Mohawk-Hudson rivers area of New York State is $51,600. The same Service estimates an annual loss to fish and wildlife in Florida and Louisiana of $20,000,000.

Aquatic weeds cost money. Figures supplied by the Corps of Engineers show that since 1939 over half a million dollars has been spent on the Potomac and Mohawk-Hudson rivers in attempts to control water chestnut. Over five million dollars have been spent in controlling the water hyacinth in Florida, Alabama, and Louisiana since 1905. These figures represent only a small area, and in spite of these expenditures, we still have both of these plants with us.

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But if you think we've got troubles now, wait until the farm ponds get rolling. Farm ponds are small and shallow. This makes them a natural for the production of aquatic weeds and algae. As of 1951, there were an estimated 1,666,000 farm ponds in the country. The annual rate of increase was 38,000. I imagine that most of you are more or less directly connected with some phase of agriculture, so it should not be hard for you to imagine the difficulties that algae and weeds can cause the poor soul who tries to use the water in his farm pond for stock watering, irrigation, or spraying.

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Now we arrive at the $64 question, namely, where are we going in aquatic weed control? I frankly don't know but I am convinced that the more we discover about aquatic plant physiology, nutritional and light requirements, and the effects of the aquatic environment on plants and herbicides, the easier our job will be. If we are able to establish a "Clearing House" for information on aquatic weed control, we will have accomplished much. If we can start a ball rolling that will snowball into some intelligent legislation governing chemical control of aquatic weeds, we will have not only accomplished a great deal but will have been very lucky. To this end the following Action Program has been put together representing the opinions and desires of many of the people working on aquatic weed control:

1. The colleges and universities perform the necessary research to determine more completely the physiology of aquatic plants.

2. Industry screen its herbicides to determine those most suitable for aquatic control.

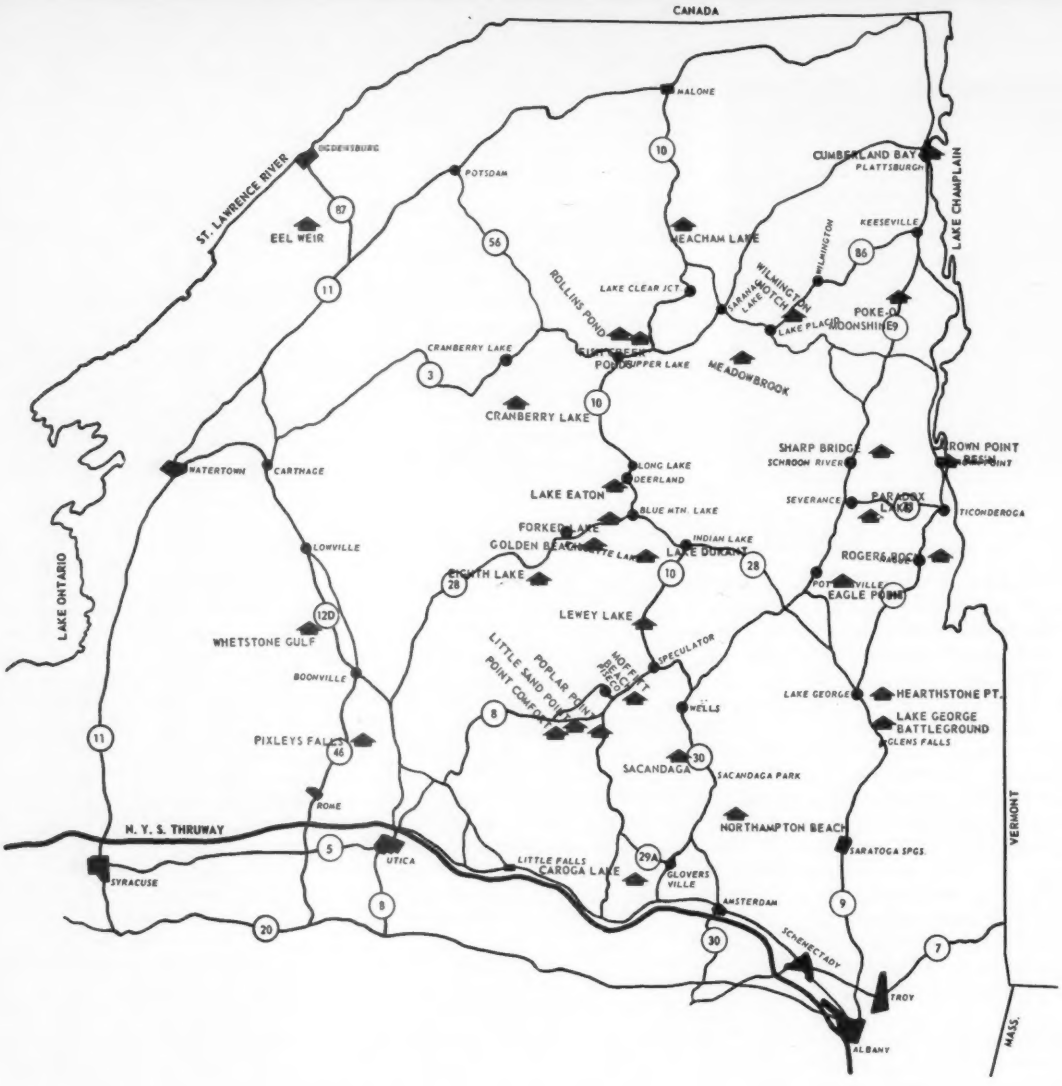
3. The colleges and universities set up testing programs to test the toxicity of the various chemical compounds to fish and other aquatic organisms.

4. State and Federal fish and game agencies conduct tank and field tests to determine the effectiveness of the various herbicides.

5. We should make every effort to enlist the co-operation of all agencies both public and private that are interested in our water resource so that all sides of the question will be represented. Our water resource is much too important to be treated lightly. Let us develop an effective method of aquatic weed control, but not at the expense of the public water supply.

6. We work toward uniform state and Federal legislation pertaining to aquatic weed controls.

—J. D. Gould,
Aquatic Biologist

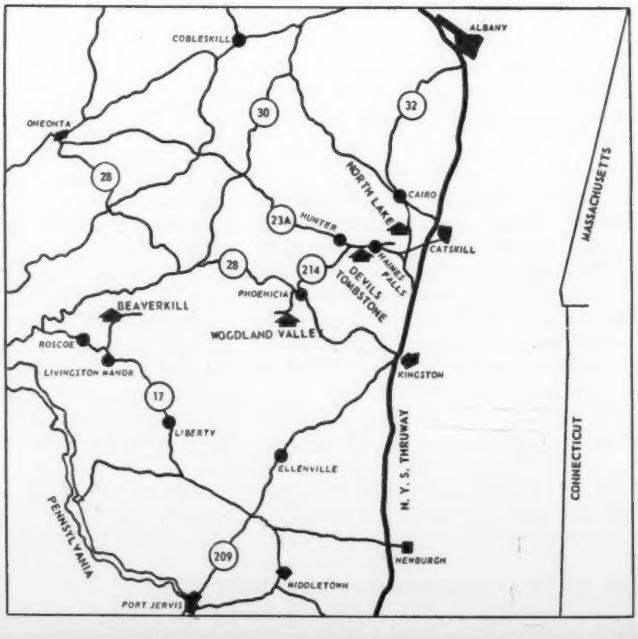


Campsite Data

THE Conservation Department's Bureau of Camps and Trails maintains 35 public campsites in the Forest Preserve; 31 in the Adirondacks and 4 in the Catskills. Last year 1,760,407 man-days were spent at these campsites, and it looks as if the 1955 season will surpass all previous records.

Typical facilities include individual tent sites, parking areas, outdoor fireplaces, picnic tables, sanitary facilities, garbage collection, and protected water supply. Lifeguards are on duty at all sites where swimming is a feature, and at such sites bathhouses are provided.

While only a few campsites have specific areas designed for house trailers, it is the policy of the Department to permit trailers where they can be accommodated



on a standard tent site (30′ x 30′), but no permanent trailer facilities are provided.

Caretakers are in residence at the public campsites from just prior to Memorial Day until September 15. At Lewey Lake and Forked Lake campsites, Caretakers are on duty until the end of the Fall hunting season. At any campsite, during the period when Caretakers are on duty, camping permits are issued on a first come-first served basis, and are required for stays of any duration. Advance reservations cannot be made. A camping service charge of 50 cents per day or $3 per week for party of up to six people is collected when Caretakers are on duty. At Cumberland Bay and North Lake Campsites a parking service charge of 50 cents a car or $2 for trucks or buses is collected for day use. At all other campsites daily picnicking and parking are free.

In the Forest Preserve the Department does not rent cabins, cottages, tents, camping equipment, boats or canoes, but at or near most of the public campsites boats and canoes are available for rent from private individuals.

Once settled at a public campsite, there is no need to make repeated trips to town for food, soda pop, ice, or milk for Junior; local stores make regular daily deliveries at most campsites.

At Lake George there are 48 State-owned islands available for camping. Permits must be obtained for camping on the islands; in the southerly part of the lake from the Caretaker on Long Island; for the central part of the Lake at Glen Island, and in the Mother Bunch Group at the northerly part of the Lake, at Coopers Island. Individual tent sites with picnic tables and fireplaces are available on these State-owned islands.

There are also 10 State-owned islands on Lake George which are used exclusively for picnicking and where camping is *not* permitted. Picnic areas are also available at the southerly end of Long Island and at Black Mt. Point.

Various private concerns at Bolton Landing rent camping equipment, boats and canoes.

ADIRONDACK

LOCATION	FACILITIES						FISHING								
	Camping		Picnicking	Swimming	Boat Rental		Trout	Northern Pike	Pickeral	Walleye Pike	Panfish	Salmon	Black Bass	Whitefish	Muskalonge
	Tent Sites	Trailer Sites			At Site	Near Site									
Caroga Lake	144	7	x	x		x	x	x	x	x	x		x	x	
Cranberry Lake	31		x	x		x	x	x		x	x		x		
Crown Point Res.	61		x	x		x	x	x		x	x	x	x	x	
Cumberland Bay	202	23	x	x		x	x	x		x	x		x		x
Eagle Point	64		x	x			x	x		x	x	x	x		
Eel Weir	15		x	x		x		x		x	x		x		x
Eighth Lake	102	12	x	x		x	x				x	x	x	x	
Fish Creek Ponds	367		x	x	x		x	x			x	x	x	x	
Forked Lake	77		x		x		x	x			x	x	x	x	
Golden Beach	173	5	x	x		x	x	x			x	x	x	x	
Hearthstone Point	190	21	x	x		x	x	x			x	x	x		
Lake Durant	54		x	x		x	x	x			x	x	x	x	
Lake Eaton	132		x	x		x	x	x			x	x	x	x	
L. George Battleground	56		(1)	(1)		x	x	x			x	x	x	x	
Lewey Lake	99		x	x	x		x	x			x		x		
Little Sand Point	67					x	x		x	x	x		x	x	
Meacham Lake	93	29	x	x	x		x	x			x		x	x	
Meadowbrook	25		x				x	x			x	x	x	x	
Moffitt Beach	181	5	x	x		x	x		x	x	x		x	x	
Northampton Beach			x	x		x	x	x	x	x	x		x		
Paradox Lake	36		x		x		x	x			x	x	x	x	
Pixleys Falls	6		x				x			x	x		x		
Point Comfort	71		x	x		x	x		x	x	x		x	x	
Poke-O-Moonshine	35		x				x	x		x	x		x		
Poplar Point	34		x	x		x	x		x	x	x		x	x	
Rogers Rock	180	16	x	x		x	x	x	x		x	x	x	x	
Rollins Pond	35					x	x	x			x	x	x	x	
Sacandaga	129		x	x			x		x	x	x		x	x	
Sharp Bridge	37		x				x	x			x	x	x		
Whetstone Gulf	20		x				x	x			x		x		
Wilmington Notch	45		x				x	x			x		x	x	

(1) Nearby

CATSKILL

LOCATION	FACILITIES						FISHING								
	Camping		Picnicking	Swimming	Boat Rental		Trout	Northern Pike	Pickeral	Walleye Pike	Panfish	Salmon	Black Bass	Whitefish	Muskalonge
	Tent Sites	Trailer Sites			At Site	Near Site									
Beaverkill	54		x	x			x		x		x		x		
Devils Tombstone	24		x				x				x		x		
North Lake	88	12	x	x	x		x				x		x		
Woodland Valley	28		x				x			x	x		x		

About Mallard Embryos

On the morning of June 11, Wheeler Grove, the owner of a farm near Trumansburg, accidentally disturbed a nest site in a field he was ploughing. He left a patch of undisturbed ground about the nest, but even so the nest was abandoned, for the eggs were cold and there was no sign of the adult around when he returned the following day to complete the ploughing.

The weather during the two days and nights that these eggs lay exposed was rather unseasonable. In fact the records kept by the Agronomy Department at Cornell University, (only about eleven miles southeast of the nest site) show the following weather conditions for this period: A rainfall of 1.51 inches, with a minimum temperature of 40 degrees F. and a maximum temperature of 68 degrees F.

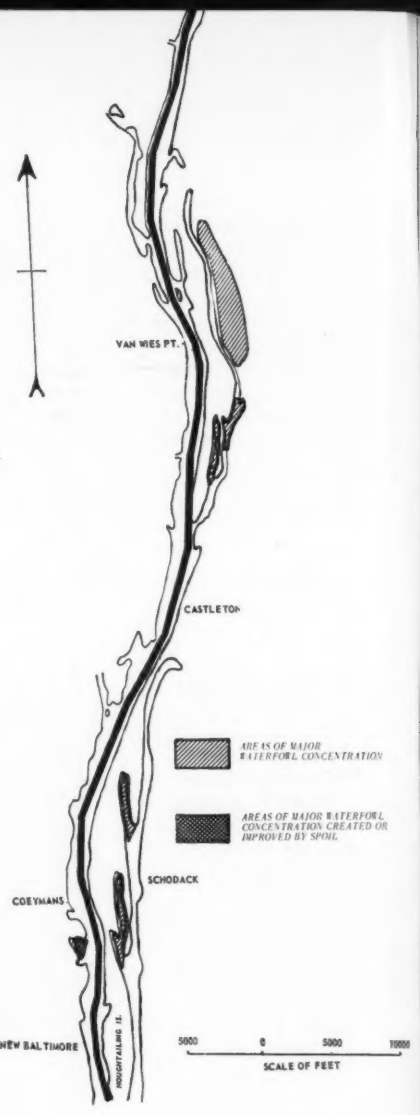
Upon investigation, the nest was found to be badly dispersed by the heavy rain, and water lay over most of the field. One of the eggs was opened, and besides a substantial amount of volk mass there was an apparently lifeless embryo, well covered with down, and with an egg tooth forming on the upper mandible. The remaining eleven eggs (with the exception of two which I kept) were taken to the Grove's house and placed in the warming oven in the kitchen stove.

The next morning (June 14) the nine eggs were retrieved from the Grove household and placed in an incubator at the Ithaca State Game Farm. Mrs. Grove said that she was sorry to say that they had forgotten about the eggs, prior to stoking up the fire in preparation for the evening supper, and was afraid the eggs had become quite hot. However, when these eggs were candled on June 17, five of the nine embryos were alive.

By 8 p.m. June 20, two eggs were pipped; by 10:30 o'clock the next morning four were pipped. At 5 p.m. that day all were cracked. By June 21 four had hatched, while one was dead in the shell.

On June 23, the surviving birds were placed in an outside pen that had a supply of water, a dish of pheasant starter crumbles and a shelter box that was supplied with an infra-red heat lamp. At this time there was one duckling that was considerably paler in down plumage and noticeably weaker than the other three. It died the next day. One of the remaining three had an abnormally large head, but it ate well and in every other respect appeared normal, and within two weeks was indistinguishable from the others.

—STUART S. PETERS, *Department of Conservation, Cornell University*



Ducks and

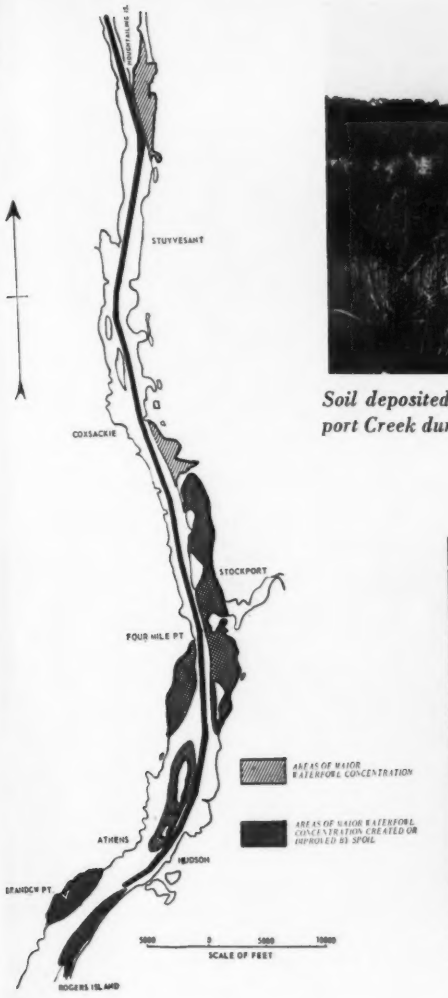
DESPITE the combined efforts of State and Canadian provincial conservation agencies, the Federal Fish and Wildlife Service, the privately-endowed "Ducks Unlimited" —and an increasing number of sportsmen-sponsored marsh development projects— waterfowl habitat in North America is being obliterated faster than it is being created. Wherever marshland stands in the path of industrial expansion, housing development or crop production, waterfowl are being ousted from their traditional breeding, feeding and nesting areas; they must search further for living room.

Long aware of this threat to waterfowl and waterfowl hunting, New York sportsmen have actively supported the Conservation Department in a well-rounded program of waterfowl research, marshland acquisition and small marsh development. During the past 14 years, intensive habitat surveys have been completed on all major waterfowl areas of the State, nearly 14,000 marshland acres have been acquired and improved for ducks, and more than 650 small marshes have been created. And of particular concern in this article, the Department has been active in trying to counteract the effect of yet another threat to ducks — navigation on the Hudson River.

In 1941, when further maintenance dredging of the 27-foot Hudson River channel became necessary, this Department, following a survey of the important food areas in the river between Albany and Kingston, interceded on behalf of the valuable waterfowl grounds. Together with the U. S. Fish and Wildlife Service of the Interior Department, an informal agreement was drawn up with the Army Engineers (who have jurisdiction over tidal streams) to the effect that waterfowl interests would be protected as far as possible. Specifically, this provided that extreme care should be exercised so that future dredging operations in the reach of the Hudson River in question will be in conformity with this policy. It further stipulated that dredged material would not be placed in waterfowl food areas at any time when disposal at other locations could be accomplished.

This arrangement has proceeded extremely well up to the present, and none of the spoil resulting from maintenance dredging at various times has been deposited to the detriment of waterfowl. Annual inspection trips by members of the Army Engineers and this Department over sections of the river where dredging was under consideration have resulted in better understanding of the problem on both sides, and close working co-operation. The chart of the river areas most important to waterfowl was brought up to date in 1950 as a result (1) of the Lower Hudson Waterfowl Investigation, and (2) new information as to how this region fitted into the over-all picture of the Atlantic Flyway. Facts and figures thus accumulated now form the basis for this Department's attempt to maintain waterfowl breeding, feeding, resting and hunting grounds along this important flight route.

Luckily for both the ducks and the hunters, the deposition of spoil from the original channel deepening operations, and from the maintenance since, has not had a serious effect upon the wildfowl using the Hudson Valley. While the original work did destroy some valuable shal-



Soil deposited along east side of Hudson below Stockport Creek during original dredging created ideal marsh

Stockport Flats section that has most ducks — and hunters along the river.

the Army Engineers

lows full of desirable aquatic food plants and some marshes with good quality emergent vegetation (such as wild rice and bulrush), it also produced good quality marshes in some places. The heavily hunted marsh south of Stockport Creek is one illustration. Here, up to 400 gunners annually congregate on opening day, amounting to nearly one hunter per acre, but such is the quality of the marsh that average hunting success is about as good as can be found anywhere in the State. Thus, dredging and the deposition of spoil need not be entirely detrimental. Such operations may be compared to the results of pollution as far as wildlife values are concerned—certain types and amounts, at the right time and place, may actually be beneficial.

The importance of the existent three-way agreement relative to the deposition of spoil from Hudson River dredging operations is emphasized anew as a result of authorization, under the River and Harbor Act of March 2, 1945, for further deepening and widening of the navigational channel. As presently envisioned this project involves the entire channel between Albany and Athens, plus several fairly long stretches at intervals from Athens to Haverstraw Bay. Not only will the channel be deepened from 27 to 32 feet, but it will be widened from 300 to 600 feet from New York to Kingston, and to 400 feet from there to Albany. All told, the estimated amount of spoil (rocks, soft material, etc.) to be dredged and deposited is about 18,000,000 cubic yards.

At first glance this would seem to sound the death knell for waterfowling along the river, especially to anyone who has seen the tremendous expanses of spoil areas already existing. How could such a huge additional amount of material be accommodated without sacrificing most of the duck habitat?

The answer is not an easy one, nor is it final at this writing. But the Engineers are following our recommendations as to primary and secondary waterfowl areas, as well as those areas of little or no value to ducks, and the future does not look as black as it might. A detailed survey report by the District Engineers of the Army, dated July, 1951, stated as follows:

"Representatives of both New York State and the Federal Government expressed concern over the damage that would result to waterfowl resting grounds and duck breeding and feeding areas, as a consequence of disposing dredged material on islands and marshland along the Hudson River between Albany and Kingston. Disposal areas for the proposed project, located with due consideration for this problem, have been approved by the regional director of the Fish and Wildlife Service, Department of the Interior, after consultation with local agencies."

From preliminary examination of the plans at their present stage, it appears that there will be little damage to the good duck areas of the Hudson River. The Engineers are following our recommendations wherever feasible, and it seems entirely possible that all the spoil material can be handled on areas of little wildlife value. A waterfowl biologist of this Department will go over the final plans and at that time may be able to suggest alternate areas should spoiling be indicated on valuable sites.

Another aid to wildfowl habitat in this connection (which has yet to be invoked) could be funds from the Fish and Wildlife Service to defray the additional cost of using alternate spoil sites where this cost is greater than originally planned and where waterfowl habitat is being protected, maintained or developed.

From the foregoing, it would appear that in spite of the march of civilization—and none of us proposes to interfere with it—there is a strong possibility that wildlife values will not only be recognized, but carefully considered and perpetuated, at least in the Hudson Valley.

—Don Foley, *Game Research Investigator;* Asa H. Smith, *District Game Manager*

Some Plants to Leave Alone

PLANTS are like people or insects: Some are a joy to meet; others are best left strictly alone. If you are a camper or a tramper, from Rouses Point to Montauk Point, recognition of the plants that may do you harm will go far to help you avoid them and resultant discomfort. We hate to think of the number of vacations that are ruined annually by the lack of such knowledge.

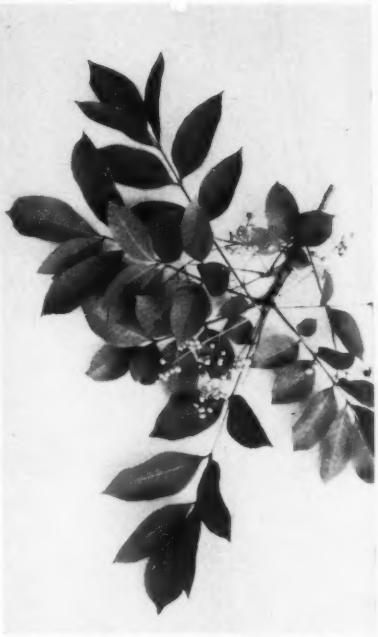
Poisonous plants can be classed as those harmful when *eaten*, like the water parsnip or the jack-in-the-pulpit, and those harmful when *touched*. Few persons are poisoned from eating the wrong plants, but many develop a dermatitis, or rash, from unwitting contact with certain plants. This article deals solely with plants poisonous to the touch. Not all people are poisoned, but susceptibility may change at any time, so the rule should be: "If in doubt, don't touch it."

Furthermore, it is not always necessary to touch a poisonous plant directly; fondling old Rover, handling a cottontail rabbit, or taking off your shoes, after any one of the above has wandered through poison ivy, is about as dangerous as picking the foliage. The non-volatile oil that causes the rash likewise may be carried on the smoke particles from burning poison ivy. The most pathetic case of poisoning ever brought to the writer's attention was that of a farmer's wife whose husband brought her sumac kindling wood for the kitchen stove (it turned out to be *poison* sumac instead of staghorn). Catching ivy poisoning from merely being downwind from the growing plants, however, is a bit fanciful; there usually is an indirect contact, like old Rover, who is immune himself but whose fur and feet can bring the poisonous oil to you.

Poison ivy (*Rhus radicans*) occurs almost everywhere in the State in old fields, hedgerows and swampy woodlands. It may creep along the ground or up into fences and trees. Its dull, gray-brown stems and somewhat glossy, wavy-margined "leaflets three," small yellow-green flowers and yellowish-white fruits — all distinguish it from such harmless species as the Virginia creeper or woodbine (*Parthenocissus quinquefolia*), with coarsely toothed leaflets in groups of *five*, and blue berries on red pedicels.

Poison sumac (*Rhus vernix*) inhabits rich, mucky, fresh water, open, brushy, or wooded swamps, but is not often encountered in this State. It is a straggling shrub, from six to 20 feet tall, with pinnate leaves at the ends of the branches that are smooth, and whose leaflets are not horizontal but ascending. The midribs of the leaflets are usually pinkish in color. Flowers are few and usually drooping, greenish yellow, while the fruits (like those of poison ivy) are yellowish-white. The non-poisonous sumacs all have *reddish* fruit, and are dry land species.

The best way to treat poison ivy and poison sumac is to stay away from them. But if contact is suspected or known, immediate, thorough lathering and washing with strong laundry soap will usually remove the poisonous principle from hands and legs. And if the rash and blisters appear, it is best to consult an M.D., although the various lotions and ointments available may give some relief from the intense itching.



Poison Sumac *(Rhus vernix)*

Poison ivy may be killed by some of the weed killers like ammonium sulfamate, or 2,4,5-T. For some reason, however, 2,4-D isn't too effective—especially where the ivy grows in the shade.

Often associated with poison sumac is the beautiful showy lady-slipper (*Cypripedium reginae*). It and the yellow lady-

Poison Ivy
(Rhus radicans)

Larger Blue Flag
Iris versicolor

these beautiful flowers are in danger of extermination by the thoughtless who try to move them in violation of the law.

The wet foliage of the wild form of the garden parsnip (*Pastinaca sativa*) causes a contact dermatitis like that from poison ivy. Its seeds are disseminated by water along streams and lakes so that bathers are often affected, while its presence in gardens and old fields affects people working in such places. Its coarse foliage and flat topped umbels reveal it to be a member of the carrot family.

Gardeners will do well to beware of the cultivated plant known as snow-on-the-mountain (*Euphorbia marginata*), with its white-margined, green leaves. Planting, pulling or mowing this and the various spurges, including cypress spurge (*Euphorbia Cyparissias*) and leafy spurge (*Euphorbia Esula*), may result in contact with the milky sap, which will cause a dermatitis. The cypress spurge is often to be found around old cemeteries and abandoned home sites.

The stinging nettles (*Urtica* spp.), and the wood nettle (*Laportea canadensis*) are found around barnyards, and roadsides, or in moist, rich, woodland bottoms. These are dull green, tall, ungainly herbs, the leaves and stems of which are covered with stinging hairs. The intense itching on bare skin usually is of only a few minutes duration. The old-timers say, "if you must touch a nettle, grasp it firmly." Then it doesn't sting—it just leaves your fingers numb.

The writer as a child handled those well known weeds, the field buttercups, by the fistful, but not everyone can do that with impunity. The juice from the tall field buttercup (*Ranunculus acris*), the cursed crowfoot (*Ranunculus sceleratus*), and one or two others, will produce sores and blisters on the skins of susceptible persons.

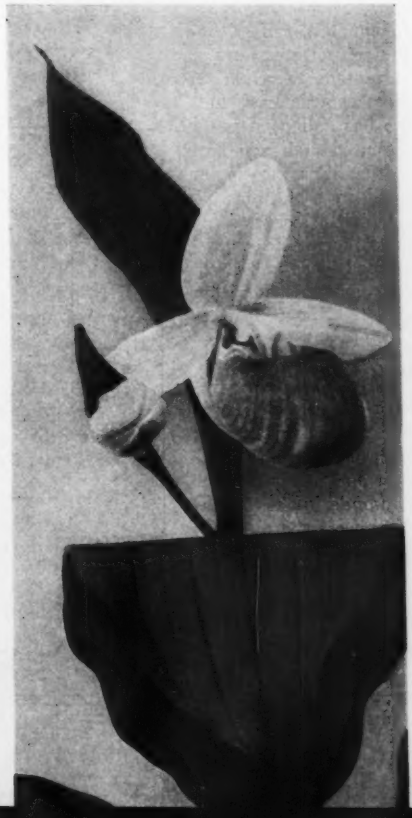
The rootstocks of the wild blue iris (*Iris versicolor*), as well as those of the garden irises, are literally poison to some people. The wild iris or blue flag is common in wet meadows and swales across the State; fortunately there are few susceptible persons. Apparently the flowers may be enjoyed by all in safety.

Flower fanciers have to be careful of an Asiatic primrose (*Primula obconica*), contact with whose leaves may bring on a rash. Others have trouble with such cultivated plants as lily of the valley, oleanders, osage orange, tree-of-heaven, and hops, and such wild plants as bloodroot, Jimson weed, burdock and May-apple.

Truly, one man's treat is another's poison, so take time to learn what to avoid, and enjoy a scratch-free summer.

—Ralph H. Smith,
Game Research Investigator

slipper (*Cypripedium Calceolus* var. *pubescens*), and the pink moccasin flower (*Cypripedium acaule*) cause a dermatitis, usually following contact with the wet foliage and stems. Unfortunately for the well-being of the lady-slippers, not enough people are susceptible, so that



Showy
Lady's-
Slipper
Cypripedium
reginae

Farm Ponds (3)

Construction and Costs

THIS is the third and concluding chapter of a series of pond articles to appear in this magazine. The first was concerned with where to build ponds, the second with where to obtain assistance in getting them built. We have not attempted to tell you how to make a complete survey and design of a pond because in most cases these most important steps in pond development require the use of surveying instruments and some specialized knowledge of engineering. We think it enough that you know that such steps are necessary; we leave it to you to secure the required professional assistance.

It is hoped that you have now reached the construction phase and we again urge that you take advantage of any assistance available. If construction assistance is not available from any of the public agencies listed in our last article, and you plan to do the job on your own, it will be to your advantage to retain the services of a reliable contractor or bulldozer operator who has had pond building experience. Even 'though you have professional help it will pay to get an operator experienced in such work. It might also be beneficial to inspect a few well built ponds and talk with the owners; you may get some good ideas and at the same time profit by any mistakes they might have made.

When to build

Everyone wants to start digging right away, but let's stop and think a bit. Most good locations for a pond are to some extent, naturally wet and boggy and the average bulldozer, wonderful as it may be, still cannot go everywhere. Even 'though he may be able to operate his machine without bogging down, the operator cannot do a finished job if conditions are too wet.

So, for the average year, let's wait until sometime during the Summer and early Fall months—between the last of the Spring rains and the first of the Fall rains. You can profitably spend your time beforehand by cutting and removing brush that will be in the way and by cleaning out any drainage ditches so that the site will dry more quickly.

Construction

To approach the construction phase in a methodical way we will outline the procedure by steps:

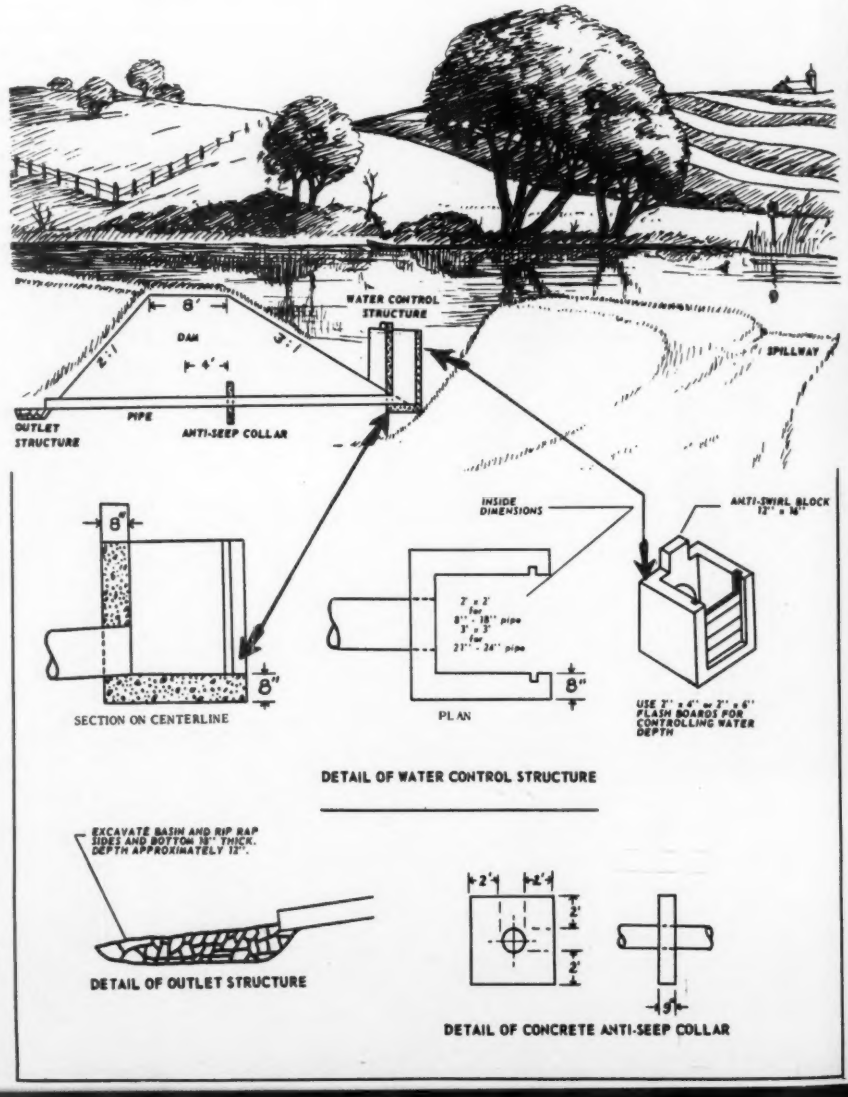
1. Clear all brush, stumps, rocks and other debris from the entire dam site, spillway area, and as much of the pond area as necessary. Push this material well out of the way so that it will not interfere with subsequent operations.

2. Consult your plans and stake out the outline of the dam and side spillway. Also mark the inlet and outlet locations of the pipe spillway. Occasionally, during construction, some of these stakes will have to be pulled and reset. If desired you can also set flow line stakes to mark the outline of the pond.

3. Remove all sod and topsoil from the dam site in order to provide a good base for the fill. This operation is termed "scalping." Scalped material can be pushed to the downstream toe of the dam and used as final fill for the top and downstream slope of the dam.

4. If soil types are at all questionable a core trench should be provided. This is a trench about 6 feet wide excavated to a watertight soil extending the full length of the dam and well into the banks on each side. Refill this trench with moist clay preferably from the pond area. Spread it in layers of not more than 6 inches and compact it by travelling over it with the bulldozer. The excavated material from the core trench can also be pushed to the downstream toe of the dam and used later on as part of the downstream slope.

5. Install the pipe. Asphalt coated corrugated metal pipe is one of the most popular and practical in use today



and is recommended for a long lasting job. Again consult your plans to make sure of proper elevations of inlet and outlet ends. Rough grading for the bed of the pipe can be done with the bulldozer, but final grading should be done by hand. Make sure the pipe lies true and, except where it crosses the core trench, that it is on undisturbed soil. Remember, this pipe will be supporting a lot of weight, and if not installed properly is liable to develop "the bends."

During pipe installation, excavation by hand is done to accommodate the concrete base for the water control structure and the concrete anti-seep collar.

6. With pipe in place install forms for the base of the water control structure and anti-seep collar and pour with a 1:2:4 concrete mix. (1 part cement, 2 parts sand, 4 parts stone.) The materials for this concrete should be sharp clean sand, about a No. 2 stone, any good Portland cement and clean water. Puddle concrete well while pouring, especially where the anti-seep collar contacts the pipe to insure a watertight bond. The primary purpose of this collar is to stop any water seepage which might occur along the pipe. Let this concrete set at least 24 hours.

While this work is in progress the bulldozer operator can be pushing up the ends of the dam or cutting the side spillway. Any suitable material excavated from the spillway can be used as fill for the dam.

7. Remove forms from the anti-seep collar and proceed to cover the pipe with the best material available. Moist clay is best. And right here is the source of most leaks unless this job is done properly. The bulldozer can push the material as close to the pipe as possible but it must be placed around the pipe by hand and thoroughly tamped into place. This may sound like hard work, but it really pays off.

8. After the pipe and anti-seep collar have been covered the bulldozer operator can proceed to finish the dam. Spread the earth in layers not exceeding 6 inches and compact thoroughly with the bulldozer. Build the dam 6-12 inches higher than required in the plan to allow for settling. Material for most of the dam should come from the pond area. Using this procedure the pond is being excavated as the dam is being built. The top of the dam should be at least 8 feet wide and the side slopes properly graded: a 3:1 slope on the pond side and a 2:1 slope on the downstream side.

9. Install the water control structure. This can be done while the operator is working on the dam and pond area. Set up the forms on the concrete base, making sure they are well fitted to the pipe and are plumb and well tied to prevent bulging or breaking away at the corners. Clean any mud off the base so that the walls of the structure will have a good bond with the base. Again make a 1:2:4 concrete mix (using the same quality materials as before) and pour. Puddle the concrete well while pouring to insure a good solid job, especially around and under the haunches of the pipe. On the inside of the forms mark the height which will be the top of the structure, and fill to this point. (This is important, because the top of this structure will be the normal water level of the pond; consult your plans again to make sure of this elevation.) For a more durable, longer lasting concrete job it is recommended that some ½ inch reinforcing rod be incorporated in the concrete of the water control structure. When completed, cover with an old canvas or burlap and allow to set for several days before removing the forms.

10. Cut the emergency or side spillway. This step does not necessarily have to come in the numerical order we list here, but can be done at any convenient time during construction. The spillway should be made to specifications (it is the safety valve for the pond) and cut in undisturbed earth. The dam should not constitute one side of the spillway unless it is heavily rip-rapped. The bottom of the spillway is usually designed to be 1 foot higher than the top of the water control structure (normal water level for the pond) and 2 feet lower than the top of the dam. This means water can be flowing 1 foot deep over the top of the control pipe inlet before it begins to flow through the side spillway. Consult your plans again to make sure the side spillway is at the proper elevation. If possible, flare the spillway at both ends and have it discharge over a well vegetated area as the water returns to the main drainage channel.

11. Excavate a basin at the outlet end of the pipe and rip-rap the bottom and sides of this basin with large stone. Fill the basin with stone so that water does not tend to collect in a pool. The basin should be about 10 feet long and 6 feet wide and is to prevent water from backwashing under the pipe.

12. Fertilize and seed the dam and side spillway with a good grass mixture. A good sod should be allowed to develop before the flash boards are installed and the pond fills with water. Plant nothing on the dam and spillway except grass.

In this article we have covered only one type of mechanical water control structure. Other designs can be used which may involve less labor and expense. This type is suggested because, if properly located and constructed, the pond can be drained when necessary and the water level can be manipulated easily—all of which makes for better pond management.

Costs

We cannot attempt to tell you exactly how much your pond is going to cost. No two ponds are exactly alike, so the best we can do is quote some average figures which can be applied to help arrive at an estimate.

Survey and design: No cost, if done in co-operation with a Soil Conservation District. If the services of an engineer are engaged the average 1- to 2-acre pond will probably take the engineer and one helper one day to survey and obtain hydraulic data. Another day will be required for one man to plot the data and design the pond.

Earth moving: This is usually the most expensive item in the development of a farm pond. Costs can run from 20¢ to 50¢ per cubic yard of earth moved, depending upon conditions. Dry weather conditions will help reduce this cost. Such costs can also be figured by the hour, depending on the size of the bulldozer. A bulldozer large enough for pond work will cost from $8 to $10 per hour (and this rate includes the operator).

Materials: At least 40 feet of pipe are usually required for the average development—the higher the dam the longer the pipe required. Asphalt coated corrugated metal pipe 12 inches in diameter costs about $2 per foot. Smaller diameters cost less; larger diameters more. Pipe connectors with bolts cost the same as a foot of pipe. Two to three yards of concrete will be required at about $16 per yard. Used lumber can usually be obtained for making the concrete forms.

Labor: Pipe installation, and making the forms and the concrete work will require two men at least two days.

IN concluding this series of pond articles we would like to repeat that we think a pond in the country is one of the best all 'round conservation practices. But a well built pond, one that will last and give many years of trouble free pleasure, is not a matter of merely pushing a little dirt here and there. Many factors are involved and we have attempted to explain the most important ones in these articles.

Latest figures tell us that more than 6,000 small man-made ponds have already been developed in New York State. About 1,200 of these were built during 1954. Here's hoping yours will be one of the next 1,200.

—Roy Irving

The beaver meadow above the old dam

Summertime, Adirondacks

All of these photographs, including the one on the cover, were taken last Summer in the southern part of Essex County, the very same part of the Adirondacks which the artist Winslow Homer so beautifully recorded in his water colors sixty years ago. This was a wild and wonderful country in those days. It still is.

These photographs may suggest in a *general* way the peculiar charm which this old, old country has acquired over the years. (The granite underneath it all, and cropping out on the mountains, is the oldest stone in the world.) And in a *particular* way, they may show why this part of the Adirondacks, 'though an old country, has an enormous and probably eternal vitality. There is always change and replacement in both the plant and animal kingdoms, and such changes happen fast here. When a tree falls or is felled, the forest floor produces quickly to fill the vacancy; when there is an opportunity for a colony of beavers to move in and make a living, they move in and alter the landscape to suit their purposes, leaving behind the beaver flows and meadows so typical of this land. Deer take over the meadows, followed perhaps by a band of coyotes. Eventually, when conditions are right for them again, the beaver come back. So do the trout.

Plants and animals come and go, but in this country there are always plants and animals; waters rise and fall, but there are always waters. The old mountains are always there.

—P. W. FOSBURGH

A camp
on the river

Big water too:
granite along the river

Native trout
below the beaver dam

Snakes of New York

by Dr. Edgar M. Reilly, Jr.,*
Senior Curator of Zoology,
N. Y. S. Museum

SNAKES have had an important place in the world ever since their first appearance some 200,000,000 years ago. (It was a snake, remember, that got Adam and Eve into trouble.) We still have the snakes and some of them continue to give us trouble. But it's time we recognized the fact that *all* of our snakes are legitimate citizens, and that *most* of them are useful.

The larger snakes of New York, although guilty of occasionally attacking nesting birds, are an important factor in the natural control of rodents, and it is interesting to note how closely the evolution of snakes, as a group, coincides with that of rodents. The larger snakes destroy countless rats (which are much more active predators on birds' nests) while the smaller snakes eat innumerable insects and insect larvae. It is true, however, that these snakes also eat beneficial earthworms, toads and frogs, and that in so doing they reduce their credit rating. In general, however, there is no group of animal species more maligned than the snakes. Epithets such as "snake in the grass," "lower than a snake's belly," "forked tongue" and "snake eyes" are commonly used to suggest something really unpleasant.

As a consequence, there is no more difficult task for a zoologist than that of convincing some person, particularly one of the fair sex, that the snake just killed in the garden or barn was beneficial, attractive and most likely harmless.

There are 18 kinds of snakes found within the boundaries of New York State. Of these only three species are poisonous, and these three have several things in common: They all have vertical pupils in the eye (in contrast to the perfectly round pupils of the harmless species); they all have distinctive patterns, colors and peculiarities which easily identify them; they are stouter in appearance than the harmless snakes, with greater width to the rear of the head, making the neck even more constricted. These poisonous snakes are not widespread ('though they may be common in some places) and they do not prefer places such as farm lands and human habitations. As a consequence, the chance that the snake killed in a New York garden or barn may be poisonous is a slim one.

The paintings by H. Wayne Trimm on the following pages show all 18 species reported within the borders of this State. Since the pictures are in color and scaled to relative size, we will confine our comments to variations in dimension, preferred abode, habits, and food.

Non-Poisonous Snakes

EASTERN WORM SNAKE (*Carphophis amoenus amoenus*): A small burrowing snake (4 to 12¾ inches, average about 9). Found under stones, logs and bark of rotting logs. Worm-like in general appearance; not known to bite. Food mainly earthworms, probably insect grubs, etc. Lays eggs in Summer which hatch in early Fall. Secretive and seldom seen.

NORTHERN RING-NECKED SNAKE (*Diadophis punctatus edwardsi*): Small snake (5 to 18 inches, average about 12). Found in moist woodlands under rocks and logs, but non-burrowing. Rarely attempts to bite but discharges malodorous anal secretions. Eats toads, salamanders, earthworms and insects. Eggs laid in early Summer hatch in early Fall. Secretive.

COMMON HOG-NOSED SNAKE (*Heterodon platyrhinos platyrhinos*): Medium-sized snake (6½ to 36 inches, average 24). Burrowing animal, using upturned snout as shovel. Prefers dry sandy soils and dry woods. Attempts to bluff attackers by puffing body and assuming striking attitude of poisonous species; if unsuccessful will feign death by twisting jaws and rolling on back (will return to this position if moved). Makes an excellent pet as it is very docile and interesting. Feeds mainly on toads, other amphibians and insects. An occasional bird is taken. Eggs laid in early Summer and hatch in Fall.

ROUGH GREEN SNAKE (*Opheodrys aestivus*): Medium-sized (7½ to 40 inches, average 28). Prefers grasslands and succulent herbage. Often found climbing on bushes and small trees. Feeds mainly on insects. It is a beautiful and most beneficial reptile. Eggs are laid in the Summer and hatch in the Fall. It depends on its protective coloration, 'though it may be seen frequently by sharp-eyed observers. Seldom bites and then only on provocation.

SMOOTH GREEN SNAKE (*Opheodrys vernalis*): Medium-sized 4½ to 24 inches, average 15). Similar in haunts and habits to the Rough Green Snake 'though less often found in trees. Known to feed only on insects. Makes an excellent and attractive pet. Eggs laid in Summer and hatch in early Fall.

BLACKSNAKE (*Coluber constrictor constrictor*): Large snake (8 to 66 inches, average 48). Climbs through trees and shrubbery with greatest of ease; on ground generally travels with head raised. Does not chase people and will bite only in self defense. Feeds mainly on rodents and insects but will eat almost any small animal. Lays eggs in June or July which hatch in August. Most individuals tame quite easily. Hibernates in large groups —often 30-40 snakes in one area. Young snakes under 24 inches in length are generally similar to Milk Snake in color and pattern except for the plain colored underparts.

PILOT BLACK SNAKE (*Elaphe obsoleta obsoleta*): Large snake (14 to 100 inches, average 48). Prefers woods and thickets 'though not confined to these. More prone to climb trees than the Blacksnake. May become quite tame in captivity but not always dependable. Prefers warm-blooded animals as food, with rodents and birds heading the list; will also eat cold-blooded animals and insects. Called "Pilot" as it is often found associated with Copperheads and Timber Rattlers; it was a superstition that these poisonous snakes were piloted to safety by this species. Lays eggs in July, which hatch in August and September. Hibernates in good-sized groups.

EASTERN FOX SNAKE (*Elaphi vulpina gloydi*): Medium- to large-sized (10½ to 60 inches, average 40). Although reported, it is not certain that this species occurs in our State. It does occur in Ohio and is common along the shores of the western Great Lakes. It is a ground snake only rarely found in trees and bushes. Its main diet is mice and fledgling birds. Its pattern is somewhat similar to that of the Timber Rattlesnake and, as it vibrates its tail among the leaves with a buzzing sound when disturbed, it is quite often killed in error. Eggs are laid in mid-Summer and hatch in September or October.

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COMMON MILK SNAKE *(Lampropeltis doliata triangulum):* Medium-sized snake (9 to 42 inches, average 30). May be found almost anywhere. It is known also as House Snake, Spotted Adder and Checkered Adder. It is frequently seen about farmhouses. Primarily active at dawn and dusk, it hides under logs and rocks by day. Field mice make up over 70 per cent of its diet, with other small mammals, small birds, slugs, worms and other snakes for variety. It does not drink milk and if found in cow barns is merely after mice. Most of the "Copperheads" brought to the State Museum are Milk Snakes; its checkered undersides, prominent black border about the reddish black blotches and around eye pupils readily separate it from the poisonous serpent. The Milk Snake is also much slimmer in proportion and has much less neck constriction than the Copperhead. The Milk Snake differs from the young Black Snake in having a black and white checkered underside. It will threaten, strike and vibrate its tail amongst the natural debris, much like the Fox Snake, when disturbed. 'Though it is an attractively colored reptile, it does not make a good pet as it often refuses to eat in captivity. Eggs are laid in early to mid-Summer and generally hatch by September.

COMMON WATER SNAKE *(Natrix sipedon sipedon)*: Medium-sized (9 to 50 inches, average 30). A rather heavy-bodied snake always found near water, particularly fresh-water streams and ponds. 'Though often called Water Moccasin and superficially resembling that poisonous serpent of the southern states, it is not poisonous. Since it does resemble the famed Cottonmouth, New Yorkers visiting the southern states should treat all living "Water Snakes" there with utmost respect. Non-game fishes make up the greater part of the Water Snake's diet with additions of various amphibians, crayfish and some rodents. They are often seen basking in the sun along the edges of our streams and ponds. The young are born "alive" in late Summer and early Fall. They are more brilliantly colored than the adults, looking somewhat like Milk Snakes 'though the black of the undersides is in irregular blotches and never distinctly checkered.

DE KAY'S SNAKE (*Storeria dekayi*): Small (3½ to 16½ inches, average 10). Very common, even in urban areas where it is found hiding under debris near houses and in nearby lots. Hibernates in large colonies sometimes numbering in the hundreds. Despite this fact, most people are not familiar with the species as its secretive habits and dull coloring make it very inconspicuous. It is a generally beneficial snake, eating slugs, insect larvae (including those of the Japanese Beetle) and worms. It is absolutely harmless, an evil smelling discharge being its main defense. The young are liveborn in late Summer.

RED-BELLIED SNAKE *(Storeria occipitomaculata)*: Small (3 to 14 inches, average 10). A species of moist woodlands rather common in some areas but seldom seen due to its habit of hiding under logs and rocks by day. It diets mainly on slugs, 'though earthworms have been eaten by captive specimens. Not only completely harmless, but an excellent control for the harmful garden slugs. It is a very pretty and dainty snake. The young are born in late Summer and early Fall.

Garter Snakes *(Thamnophis)*

BUTLER'S GARTER SNAKE (*Thamnophis butleri*): Small (6 to 25 inches, average 18). Usually found in low wet meadows. This species differs from the Common Garter Snake in that the dark stripes are three scale rows wide on the fore-part of the body and the middle light side stripes are sometimes orange. The young are born in early Summer.

COMMON GARTER SNAKE *(Thamnophis sirtalis sirtalis):* Small to medium (7 to 44 inches, average 24). Found almost everywhere, 'though less common in forests. Differs from Butler's in that the middle light stripe is never orange and the dark stripes are only two scale rows wide throughout the snake's length. The young are born in late Summer.

Both Garter Snakes diet on earthworms, slugs, amphibians and fishes. Both will bite if molested, 'though the Common Garter Snake is more aggressive. They are probably the most common and best known snakes in the eastern United States, since they are not especially secretive. Many a harmless Garter Snake has been killed because of its habit of flattening the body when molested and "making like a poisonous snake." Two females in the N. Y. State Museum collection gave birth to 145 young snakes; 90 from one parent! All young were preserved.

EASTERN RIBBON SNAKE (*Thamnophis sauritus sauritus):* Small to medium (8 to 36 inches, average 24). A very slender Garter Snake with an extremely long tail averaging ¼th to ⅓rd of the total length (see below). They are more partial to water than the other Garter Snakes, seldom being found far from water. Salamanders and frogs seem to be their main diet. Their body discharge, when molested, is rather sweetish smelling. They will bite, but some individuals make good pets. Young are born in later Summer.

Poisonous Snakes

NORTHERN COPPERHEAD *(Anastrodon contortrix mokeson):* Medium to large (7 to 53 inches, average 30). A rather chunky-bodied snake of coppery hue most often found in rocky or woody places and seldom singly. May be common locally wherever found in New York State. It eats a considerable variety of animal food, from small mammals to insects; mice, shrews and caterpillars are favored. They generally prefer to crawl away from any disturbance, but will strike viciously if pressed and are met commonly by hikers and rock climbers in places embarrassing for both parties. Since this is a widespread species in the United States, more people are bitten by Copperheads than by any other poisonous snake. According to the Antivenine Institute's figures, 308 persons were bitten in 1928 and 1929 throughout North America — but there were no fatalities, regardless of treatment. The bite, however, has been fatal at times, mainly to children; the larger the human, the less chance of a fatality. Young Copperheads are born in late Summer.

EASTERN MASSASAUGA (*Sistrurus catenatus catenatus*): Small to medium (8 to 37 inches, average 22). A small chunky-bodied snake complete with rattles and poison. Because of their small size, swamp-loving habits, secretiveness and fairly low toxicity of poison, no deaths have ever been recorded in New York State from bites of this species. Although authorities consider that the bite of this species is not dangerous, it is most wise to treat the creature with respect. In its favored swamp homes in New York State (known only from two swamps in western and central New York), it lives mainly on frogs and mice. The young are born in late Summer.

EASTERN TIMBER RATTLESNAKE *(Crotalus horridus horridus):* Medium to large (about 10 to 60 inches, average 42). The preferred habitat is rocky timbered hillsides, unfortunately often close to densely populated areas. 'Though it has been extirpated from much of the range shown on the map by organized snake hunts so that its distribution is quite spotty, this snake still ranks fourth in the Nation both in percentage of deaths resulting from its bite and in number of persons bitten. Limestone outcrop areas are preferred, as this type of rock is usually deeply fissured and contains many caves where the Rattlesnakes can hibernate by the hundreds. At such "dens" many hundreds are killed, particularly in the mid- and late Fall months.

Fortunately the snake is not particu-

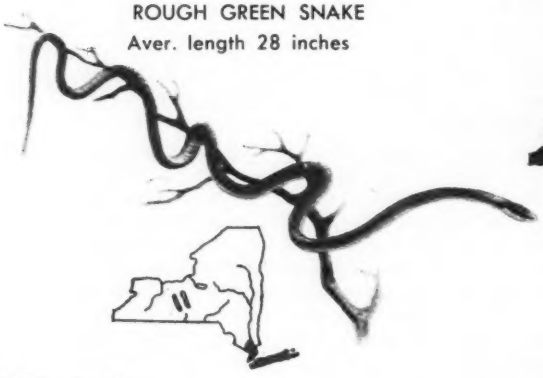
(continued on page 26)

Snakes of New York

AND THEIR RANGES

EASTERN WORM SNAKE
Aver. length 9 inches

ROUGH GREEN SNAKE
Aver. length 28 inches



NORTHERN RING-NECKED SNAKE
Aver. length 12 inches

EASTERN SMOOTH GREEN SNAKE
Aver. length 15 inches

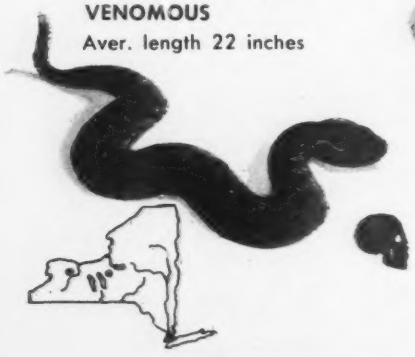
BLACKSNAKE
Aver. length 48 inches

PILOT BLACKSNAKE
Aver. length 48 inches

TIMBER RATTLESNAKE
VENOMOUS
Aver. length 42 inches

NORTHERN COPPERHEAD
VENOMOUS
Aver. length 30 inches

EASTERN MASSASAUGA
VENOMOUS
Aver. length 22 inches



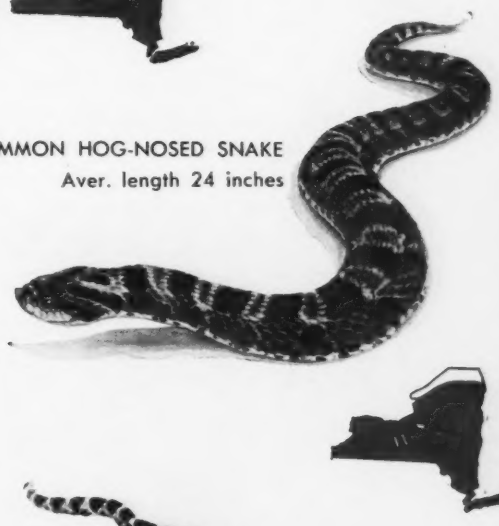
EASTERN RIBBON SNAKE
Aver. length 24 inches

COMMON GARTER SNAKE
Aver. length 24 inches

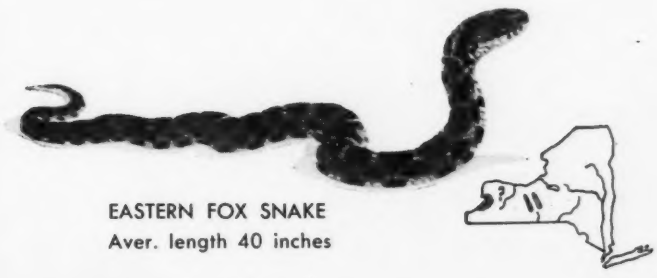
BUTLER'S GARTER SNAKE
Aver. length 18 inches

DE KAY'S SNAKE
Aver. length 10 inches

RED-BELLIED SNAKE
Aver. length 10 inches



COMMON HOG-NOSED SNAKE
Aver. length 24 inches



EASTERN FOX SNAKE
Aver. length 40 inches

COMMON WATER SNAKE
Aver. length 30 inches

COMMON MILK SNAKE
Aver. length 30 inches

(continued from page 23)

larly aggressive, and single individuals will crawl away from humans if given the chance. Unless one is equipped to kill the snake, it is more prudent to let the creature crawl away than to chance a dangerous provoked attack. "Dead" Rattlers have bitten the careless expert as well as many neophytes, so care should be exercised in handling freshly "killed" snakes. Furthermore, the dry venom retains its killing powers for some time; it follows that the poison sacs and contents should be carefully handled at all times.

The major part of the Timber Rattler's diet consists of mice, and then, in order: Squirrels, chipmunks, rabbits, birds and shrews. This species is not recommended as a pet or rodent deterrent! It is not known when the young are born; presumably in late Summer or Fall. Nor are there accurate maps of the distribution of this species in the State, and anyone knowing the exact location of infested areas could send the information to the author at the New York State Museum, Albany 1, New York.**

Do's and don'ts

WHILE the poisonous snakes are fresh in our minds let's list the do's and don'ts.

Do check the range maps and then learn to know the dangerous snakes in your area. (Antivenine will cause sickness in some people if injected when it was *not* a poisonous reptile that did the biting.)

Do carry a snake-bite kit when hiking or active in those areas where poisonous reptiles are known to occur. Serum such as Antivenine Nearctic Crotalidae prepared by Sharp and Dohme will react to the venom of any poisonous snake native to New York. Drug stores in those areas where poisonous snakes are found are generally well-stocked with such items.

Know how to use your kit before its use is mandatory. In general the following rules apply: (1) A tourniquet between the heart region and the bite released every 15 to 20 minutes for about one minute, and never made very tight; (2) cuts over the fang marks and in the general area of the bite should not be more than ¼ inch deep and done with a sterile knife or blade. This should be left to a Doctor if one can be reached within a few minutes; (3) suction should be applied to the cuts for 20 to 30 minutes, preferably by a mechanical device; the mouth is safe only if there are no cuts or sores present in the mouth or the stomach; (4) inject antivenine as soon as evidence of poison is apparent and after cutting and sucking has started; (5) any swelling area should be cut and suction applied, particularly at the base of the swelling; (6) get the patient to a Doctor as soon as possible. Carry him; never allow him to run or move rapidly as this increases the speed of circulation of the lymph which is the main vector of the poison.

Do be careful where one steps or places the hands when in snake infested areas.

Do wear protective clothing when in dangerous areas. Over 90 per cent of snake bites are below the knees and elbows. High leather boots and care in placing the hands will eliminate most of the danger.

Don't take any alcoholic drinks for a snake bite; it speeds the circulation and brings a speedy—if happy—demise.

Don't panic and run—*walk* to the nearest source of help if no other course is possible.

Don't pick up "dead" snakes.

Don't handle any snake unless you know it is harmless.

Don't panic if bitten by a harmless snake—the bites of harmless snakes have caused deaths from shock, not from poison.

Notes on New York snakes

• Newborn snakes are capable of injecting their poison as effectively as adults. But since the young snakes are smaller and have less poison, danger of death from such a bite is lessened considerably. Poisonous snakes also accumulate venom during hibernation, and thus a snake is likely to be more poisonous on emerging in the Spring than it was in the Fall.

• Snakes do not bite with the forked tongue, which many people erroneously refer to as the "stinger." Our poisonous snakes *all* have prominent long fangs in the fore-part of the upper jaw. These are erected as the mouth is opened. In the harmless snakes all the teeth are about the same size and none retractible.

• Due to their recurved teeth snakes can seldom disgorge any food item once they have started to swallow it. The lower jaws, as shown in the illustration, are joined at the front by an elastic ligament (A) which stretches as a large object is being swallowed. Further, the lower jaws are joined to the main part of the skull through a series of two hinged bones which open out somewhat like an accordion pleat "unhinging" the jaw (at point (B), thus allowing objects larger than the snake's head to be swallowed with ease.

There are limitations imposed by the stretching extent of the jaws and the neck opening; there are cases on record where snakes have choked to death on too large a meal.

• Snakes have necks and tails. Because no existing snake has signs of the forelimbs of their ancestors the neck is, in general, the region from the back of the skull to where the lungs start in the rib cage—never visible from the exterior and best forgotten unless you're interested in snakes' necks. The tail, however may be measured externally, and is one of the best means of separating the Garter and Ribbon Snakes—the Ribbon Snake having by far the longer tail. The tail starts at the anal opening, which on all our snakes is at the first split belly scale from the head.

• All snakes in New York hibernate during the Winter months.

• All snakes shed their skins as they "outgrow" the old. This may happen several times a year.

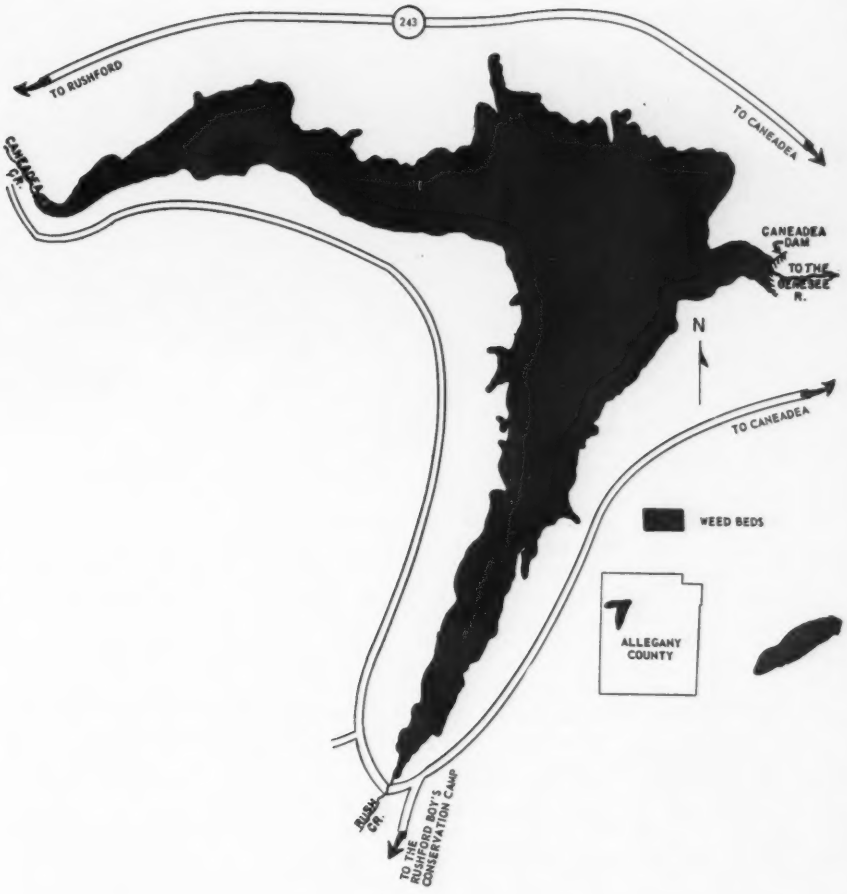
• The Rattlesnake's age cannot be told by the number of rattles. A new rattle is added each time the skin is shed (often more than once a year) and the older rattles are very often worn or broken off.

• Never force *any person* to touch or handle even a harmless serpent. Never play pranks with snakes; maybe you know and understand snakes, but most people don't.

Recently a woman was stranded, somewhat panic-stricken, in her apartment by a "greenish Garter Snake." It took a squad of six policemen to rescue her from this snake—which was all of four inches long. Snakes aren't that bad—some knowledge of snakes would have saved the woman nervous strain and embarrassment, and the city the labors of six policemen. Furthermore, as we said at the outset, most of our snakes are useful citizens.

** As a guide to completing information on the range of snakes in New York, the author will appreciate accurate records of observation; particularly of the eastern timber rattlesnake.

Rushford Lake



CHEMICAL CHARACTERISTICS

Water: Relatively soft; color—white
pH: Alkaline
Oxygen: Good at all depths

PLANT LIFE

Vegetation quite limited, found in shallow ends and a few bays. Water level fluctuation and relatively steep underwater slopes tend to keep weed growth down

LOCATION

Northwestern Allegany County

PHYSICAL FEATURES

Area: 550 acres
Elevation: 1,440 feet
Maximum depth: 120 feet
Length: 2.4 miles in western arm
2.1 miles in southern arm
Maximum width: ¾ mile

GENERAL

Boats are available for hire at the lake
Limited tourist accommodations available in the area
The Hanging Bog Game Mgt. Area and Rushford Conservation Camp for Boys are located two miles up Rush Creek, south of the lake
The Towns of Rushford and Caneadea (in which the lake is located) have ordinances against trespassing on private lands without written permission of the owner

HUNTING

Excellent deer and ruffed grouse territory on hills around much of the lake
State-owned hunting lands on southeast side of Rush Creek just upstream from the lake

FISH

Smallmouth Bass (SmB): Common; generally distributed; growth rate good; reproduction excellent in this lake
Rainbow Trout (RT): Fairly common; limited spawning run in Rush and Caneadea creeks where successful reproduction occurs; growth rate is fair
Lake Trout (LT): Rare; limited to deeper central portion
Brown Trout: Rare; an occasional individual caught; growth rate fair
Calico Bass (CoB): Abundant; generally small
Bullheads: Abundant; generally small
Common Sunfish: Common; good growth rate
Rockbass: Fairly common; growth rate good
Cisco (C): Abundant; mostly in deeper waters; only rarely caught by anglers
Yellow Perch: Common; generally small
Suckers: Abundant; grow to large size
Carp: Common; generally small; mostly found in shallow ends and weedy bays
Minnows: Fourteen species present

HISTORY

This is artificial impound of Rush and Caneadea creeks built by Rochester Gas and Electric Corporation in 1925
Yearly fluctuations in water level as great as 65 feet occur as the R.G. & E. releases the water stored in Rushford Lake to help maintain the volume of the Genesee River for their power generating stations downstream. The lake is generally full during late Spring and Summer and is drawn down in the Fall and Winter
The lake has been stocked, by the State, with lake trout, rainbow trout, smallmouth bass and ciscoes. The present policy is to stock rainbow trout only as the other species have developed self-perpetuating populations

—WILLIAM G. BENTLEY, *Fisheries Biologist, Western Fisheries District*

Smallmouth Bass

Our Black

Smallmouth bass

A SMALLMOUTH bass doesn't have a very small mouth. But whether or not the name fits, it has long been accepted for this highly popular game fish. Many New York anglers prefer to call this fish "black bass" even 'though this name is not too exact a description either. Very young bass fry are quite black, it is true, but larger bass are adaptable to color changes to fit the type of bottom of the waters in which they live. In New York these waters are very extensive, for the smallmouth was native to Lake Erie, Lake Ontario and many large, lowland lakes and was widely stocked into upland waters.

Although classed as a "warm-water" game fish, the smallmouth thrives in many trout streams. It is in the larger lakes and rivers, however, that the best bass fishing is to be found. Under favorable conditions of temperature and food supply bass reach ten inches at three years of age and within their life span (as much as 16 winters) may reach five pounds or more. (The record New York smallmouth, 9 pounds, was taken from Friend's Lake outlet, Warren County, in 1925.) But unfortunately many bass populations are stunted from various causes—including cold water, short growing season (due to high elevation) or lack of food (or too much competition for the available food). A good supply of minnows or crayfish seems to be essential in good smallmouth waters, and it follows that these are favorite baits used by bass anglers. Artificial lures which imitate such natural foods are also successful at times, while fly fishing for bass is an excellent sport in many waters.

One reason for the generally successful reproduction of smallmouth bass is that the male fish is not only the homemaker but also acts as baby sitter. After eggs are deposited by the female on a saucer-shaped nest of gravel cleaned off by the male, they are actively defended by father bass who continues to ward off intruders even after the fry rise from the nest and have formed a school along shore.

Largemouth bass

The largemouth or bigmouth bass has only a slightly larger mouth than the smallmouth. It's young have a black lateral stripe, and some trace of this black band persists throughout life. Preference for really warm waters is much more pronounced in this species of bass. Along the Great Lakes area the largemouth is found in the warm, shallow bays, rarely in the deeper, colder water of the smallmouth grounds. Although less abundant in natural New York waters than the smallmouth, the largemouth is regarded as better adapted for farm ponds and has been widely stocked in a multitude of these impoundments.

Under favorable New York conditions a size of ten inches is reached in two years. The maximum age recorded from scale reading (in northern waters) is 16 winters, and the State record, 10 pounds, 6 ounces, is held by two fish —one from Rennselaer County Pond in 1931, and the other from Sacandaga Reservoir in 1942.

Anglers are fond of arguing over the relative game qualities of the largemouth, which usually is hooked and fought in warm, shallow waters. It should be remembered that under these conditions a fish tires quickly, but in cooler water the largemouth is a good fighter. Besides the usual natural baits and lures, surface fly rod "popping bugs" are popular for taking largemouth in the shallows.

One of the interesting facts discovered about largemouth bass in studies of artificial ponds is that they learn to be surprisingly wary and cannot always be induced to bite even in small farm ponds where there is seemingly little room to escape the offerings of anglers. In contrast to the decided preference of smallmouth bass for gravel areas for nesting, the habits of largemouth bass are more adaptable; where no gravel is available the male fish sometimes clean off an area of cat-tail or bulrush roots or other firm bottom debris upon which the adhesive eggs can find attachment and not become smothered by silt.

Basses

At this time of year innumerable men, women and children devote their time to outwitting and outfighting a black bass. Largemouth or smallmouth, its capture is an event that most anglers want to experience more frequently. But just how frequently the large number of people who want to catch bass can achieve this happy result will depend upon the success of bass management.

Black bass manage their own affairs rather well. They are aggressive in defending nests and schools of young against all comers. They manage to learn to avoid angling lures to the extent that it is not unusual for biologists in northern waters to find bass which have achieved the ripe old age of a dozen years or more. They even manage to drive out other fish to some extent, particularly trout in warm streams and many Adirondack lakes or ponds. All in all, bass are in no danger of extermination in New York waters.

But, comforting as this thought may be, anglers are not content just to know that bass, at least a few of them, are around somewhere. They want big bass and lots of them, and of course they would feel the same way even if our waters produced ten times the number currently being harvested by those who are skilled in outwitting bass, who are just plain lucky—or both.

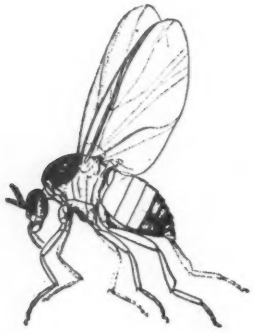
Efforts to manage bass fishing have taken several forms. Anglers have been urged repeatedly by conservationists (including other anglers) to fish more for sport and less for big "take-home pay," and this may have helped stretch our bass reserves under increasing pressures. Conservation agencies have been urged to "liberalize" restrictions so as to permit a greater utilization of the bass resource, and this has helped in many situations (including farm ponds, where taking a large number of the smaller bass is often preferable to waiting for "ten-inchers"). An important phase of bass management, although it may not at first glance seem to be such, is the effort put forth by licensed commercial netters in the removal of a considerable poundage of competitive fish (particularly in Lake Ontario and Lake Erie); also considerable removal of non-game fish by angling, spearing and dipping. And bass propagation has long been part of the management effort and has been responsible for successful introduction of the smallmouth and largemouth into new waters.

Although space is too limited to attempt to evaluate all these phases of bass management, the aggregate effect of such efforts has not been enough to build up the resource to the level we would like to have it. There are limitations to all these methods: Anglers can be moderate, but need something more tangible than fishing just for exercise; "liberalization" as to size and limits is sound only where there are enough bass to stand the increased pressure; removal of competitive fish is not generally practical in most waters; propagation can only add a little to what natural reproduction supplies in our vast acreage of bass waters, and does nothing to increase the food supply so as to grow bass for the three years or more they usually require to reach catchable size.

Anglers generally have their pet spots —no one can fish everywhere in one lifetime. It is difficult to explain to an angler why a large increase in bass cannot be achieved in X Lake (X marking the spot where *he* likes to fish). But, if you bear in mind that the bass waters of New York add up to literally millions of acres, it is perhaps easier to see that bass management is indeed a knotty problem. To solve it a lot of hard thinking and hard work will be necessary. Environmental conditions will have to be preserved so that bass can live; in some waters stocking will be of help if reproduction is inadequate; and competitive fish (of which there are many both in species and total amount) will need to be held down so that more of the potential productivity of these favorable waters can go into growing stately black bass, rather than being diverted to fish of less or no angling value.

—JOHN R. GREELEY,
Chief Aquatic Biologist

Largemouth Bass



Blackout for Blackflies

by Dr. Donald L. Collins,*

State Entomologist

BLACKFLIES have been a subject of concern to the State Entomologist's office for many years—and a subject of concern to the inhabitants of (and visitors to) our woods and mountains for many generations. As early as 1884 the State Entomologist, Dr. J. A. Lintner, reported on the biting habits of one of our most important pest species of blackflies, now known as *Simulium venustum* Say. And in April, 1930, Dr. R. D. Glasgow, then State Entomologist, reported that his office had begun "a study of blackflies and other aquatic insects in the Adirondacks."

Thus it has been somewhat over fifty years that this office has been investigating the blackfly. However, as Dr. Glasgow went on to point out, the work "could not be carried on either continuously, or *on a scale commensurate with its importance*, for lack of funds." But just before his retirement five years ago Dr. Glasgow had the satisfaction of revitalizing the blackfly control investigations and starting them on what now appears to have been the road to success in specific control programs on a rather large scale.

Before considering these programs in greater detail, it may be well to say a little about the blackflies themselves, in order better to understand the technique of control. We probably don't need to tell you that blackflies annoy man both by biting and flying about the head and face and entering the ears, eyes, nose and mouth. And their bites may cause intense itching and be so numerous and severe as to produce headache, fever, nausea, and swelling of the lymph glands. Furthermore, scratching the bites may even result in secondary infections.

The maggot-like blackfly larvae are found in rapidly flowing streams, sometimes in enormous numbers, attached to submerged rocks, sticks, or trailing grass blades. They also occur on portions of dams where the water is flowing swiftly. Because of the fact that adult blackflies often swarm in to attack persons who are gardening, cutting brush, or raking leaves, many persons have the mistaken impression that they breed in such situations, and it is sometimes difficult to convince them that actually *they breed only in running water*. This fact is the basis for present control programs.

The control investigations during the past few years have proceeded rapidly in several directions, using new materials and new techniques, so that although much remains to be learned we can now offer a good degree of assurance that areas within the boundaries of adequate control programs can achieve noticeable blackfly reduction.

This blackout of blackflies first occurred in the Town of Webb (Herkimer County) in 1948. In that year it was brought about by a regional fogging program, using both a helicopter and truck-mounted fog machines. Although this method was successful, it was expensive. But the citizens of the area, who for the first time could work and play out of doors in comfort in June, demanded the continuance of the program, which was financed solely within the town. At the same time they wholeheartedly co-operated with the State Science Service in investigations which have led to cheaper and even more effective measures for blackfly abatement.

Control measures may be directed either against the adults or the larvae. In general, larval control measures are favored in areas where blackfly control is desired for an entire season over a large area—such as around Summer camps and resorts. Adult fly control measures are favored in areas where temporary control is desired, such as along railroad tracks and roads, or in forests where men are working for short periods. As these examples suggest, larval control is effective for long periods while adult control is of short duration. In larval control, all the streams in a wide area are treated to eliminate the larvae. In adult control, usually only the immediate area where the flies are annoying is treated. But the wider the zone of treatment, regardless of method, the more effective the control.

Aircraft application of insecticides to control blackfly larvae has certain advantages over hand application; more complete coverage can be obtained, especially in the less accessible areas; there is less danger of overdosing streams; and the operation can be completed more quickly at the proper time and can be more closely supervised. Such treatment may be effectively accomplished by small 'planes such as Piper Cubs. 'Planes equipped with floats have been used advantageously in areas where there are many lakes and few landing fields.

Blackfly larvae are apparently more susceptible to DDT than the other animals found in streams and they can be effectively controlled without undue injury to most other fish food or to the fish themselves. The amounts of insecticide needed are very small in proportion to the total volume of water flowing by the point of application during the period of treatment. *Suggested dosages are so far below the level that would be injurious to crayfish, fish, and frogs that any injury to these organisms would be a certain indication of heavy overdosing.*

It is quite simple to calculate the time and amount of spray material required to treat a given area from the air. The number of flight miles required to spray an area for blackfly control is equal to about four times the number of square miles treated, since the swaths flown and sprayed by the plane are about a quarter of a mile apart. For example, to treat 100 square miles it would be necessary to spray 400 flight miles.

A total of about 400 gallons of 20 per cent solution (1 gallon per flight mile) would be needed for a single treatment of this magnitude. The number of treatments required each year depends on the species of blackflies present in the area being treated, but in most parts of New York where blackflies are a problem, two treatments a year are necessary for adequate control. In some cases it may be

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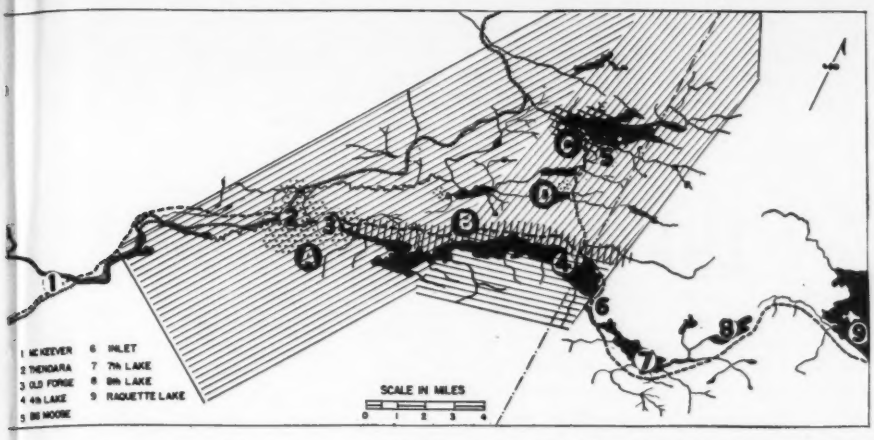


Sections fogged by helicopter in 1948 in Town of Webb: (A) "Critical control area" around Thendara and Old Forge; (B) north shore of Fulton chain of lakes; (C) Big Moose; (D) isolated properties (hotels, camps separated from principal fogged areas). Numbers are reference observation points. Color shows Town of Webb blackfly control areas in 1952. Sprayed areas (parallel lines) show airplane swath pattern.

advisable to spray considerably more than 100 square miles, while in others it may be possible to obtain adequate control by spraying considerably less. The most successful program to date has been in the Town of Webb, where 150 to 200 square miles are treated. The results in smaller areas are less predictable and are receiving further investigation. (See following article.)

If the treatments are applied at the proper times and if the dosages recommended are used, a reduction of at least 85 per cent in larval populations of the principal biting species (*Prosimulium hirtipes*), the early Spring pest, may be expected. Control of this species, which overwinters in the larval stage, was very consistent in the Adirondacks when streams were treated in mid-April before the larvae enter the relatively resistant pupal stage.

But control of the *later* biters (*Simulium venustum* and *S. tuberosum*) by aircraft spraying has not been so uniformly successful. This may be due to several factors. First, these species overwinter in the egg stage and the eggs hatch at different times in different streams. So there is no one time when the streams can be treated to kill *all* of the larvae of these species. The practical result is that it becomes necessary to treat the warmer streams earlier (about mid-May) and the cooler streams later (late May) or, as a compromise, to pick a time when the most larvae are present in the streams—obtaining *partial* control.

A second factor making control of these species more difficult is the appearance of foliage in the woods by the time the second treatment is applied. The foliage interferes with the deposit of the insecticide on the streams making control from the air at this time less effective. In view of the difficulty in getting as good coverage in the second spray as in the first, the use of DDT-impregnated plaster blocks (see below) for the second treatment mas been practiced in some areas and for certain streams. And the recent development of techniques using granular insecticides to penetrate foliage more effectively may help solve this problem; anyway, it is being investigated.

In areas where funds for aircraft application are not available, but where there are volunteers or town employees who can do the work, hand application methods may be used. In localities where the streams are readily accessible and not too numerous, hand application of insecticides may be just as satisfactory and less expensive than application by airplane. Several methods have been used in both experimental treatments and in large scale control programs.

The use of plaster blocks containing DDT was the first method used on a large scale in the Adirondacks. Its simplicity caused it to become popular in a number of communities. In the plaster block method of stream treatment, DDT is released slowly into the stream from a gradually disintegrating block. It is important to place these blocks in swiftly flowing water since they release the insecticide by disintegration rather than by dissolving. Properly placed blocks should disintegrate completely in 24-48 hours. *A block placed in still water will not kill blackfiy larvae.* Since blocks are placed in streams during a period when water levels are fluctuating, special care must be taken to tie the block in a spot where changes in the water level will not leave it stranded out of water. *A block out of water will not kill blackfly larvae.***

Half a dozen or more communities and camping areas in the Adirondack area now have blackfly abatement programs under way. The Town of Webb, which pioneered regional control, has the largest area under treatment. This area includes Old Forge, Big Moose, Thendara, McKeever, and Eagle Bay, and comprises close to 200 square miles. Their program has been repeated, with modifications suggested by current research, every season since 1948, and has virtually become an accepted town service—like snow removal.

Other communities which have control programs are Lake Placid, Forestport, Blue Mountain Lake and Caroga Lake. And several camps, including the State campsite at Paradox Lake and private corporations which have sufficiently large holdings to warrant treatment over several square miles in order to achieve abatement at central points, have also instituted blackfly control programs.

But before closing, a word of advice and caution should be inserted. The techniques of blackfly control are deceptively simple, but as they are passed around verbally, some of the most important points may be omitted. *All* of the potential blackfly streams in an area must be treated. At present we would hesitate to predict good control in any area where the treatment covered is less than about 50 square miles, except under especially favorable conditions.

Also, unless the first treatment is put on very early in the Spring (usually by the middle of April) a considerable amount of annoyance may result early in the season from blackflies which developed in warmer waters (such as the streams from large shallow "flows") where the blackflies were already in the pupal stage before the treatment.

Another reason for dissatisfaction with control of the later species has already been mentioned; namely, that by the time the second treatment is applied, foliage has appeared and prevents some of the spray from reaching the streams. Thus, small streams that are thickly overgrown with alders or other vegetation may not receive adequate dosages. Further, the differential in temperature of different streams as the season advances results in spreading the development of the larvae over a longer period, so that some may be in relatively non-susceptible stages when the treatment is applied.

The Science Service is studying ways and means of overcoming these hindrances to effective control. In the meantime we would like to emphasize that all blackfly control methods are of relatively

(Continued on page 46)

** A table, based on experiments in typical Adirondack streams, has been drawn up for use as a guide in stream treatments by hand. The dosages required depend on many factors including the width, depth, rate of flow, number and size of pools and obstructions to flow. This table and other details are given in a mimeographed circular entitled "Control of blackflies in New York," available from the New York State Museum and Science Service, State Education Building, Albany. This circular also gives directions for making the plaster blocks, and for fogging and mist blowing for control of adult flies.

THE BACK OF THE BOOK

Scattershots

And Department Activities

A Richardson's goose

During recent banding operations at Oak Orchard Refuge (Genesee County), where approximately a thousand geese were caught, a rare subspecies of the Canada Goose for this area was among those taken. It was a Richardson's Goose.

The Richardson's Goose (also referred to as the Hutchins Goose) is a small edition of the Canada Goose weighing approximately four pounds and in markings much the same as the larger goose. Only in bill length and overall size can he be readily distinguished. This little goose breeds in the Eastern Arctic (Baffin Island and Melville Peninsula) and migrates down the Mississippi Valley to winter on the northern coast of the Gulf of Mexico. (Kortright)

As far as is known, this is only the second verified report of this little goose in Western New York State.—GERALD E. CUMMINGS, *Oak Orchard Refuge.*

Conservation where needed

One of the most fundamental and comprehensive programs for the conservation of natural resources in New York State (and the Nation) received a well deserved vote of approval this year—and substantial help from the House of Representatives when it increased, by $1 million, the Federal Soil Conservation Service budget request for the small watersheads protection program. The appropriation bill passed by the House makes $12 million available to the S.C.S. for this program; an increase of $4,790,000 more than approved by Congress for the current fiscal year. The measure now goes to the Senate for its approval.

The small watersheds program, analyzed by Irving B. Stafford, State Conservationist, Soil Conservation Service, in THE CONSERVATIONIST, Feb.-Mar., 1954 is a "grass-roots" approach to the vital problem of soil and water conservation where it counts most—on the upper watersheds where little problems are born to grow, if unchecked, into destructive "goliaths" in the big valleys below.

Pioneered last year in New York by pilot projects on the Little Hoosick, Rensselaer County, Great Brook, Chenango County, Dean Creek, Tioga County and Ball Creek, Chautauqua County, the program provides opportunity for farmers and townfolk to work in co-operation with their Soil Conservation District, the New York Conservation Department, County Agricultural Extension Agents and town governments to make their communities richer and better places in which to live.—A. W. BROMLEY

Maid of the Mist

There'll be a "Maid of the Mist" in the pool below Niagara Falls despite conflicting reports. First word was that those two "Maids of the Mist" would be sailing again despite the scorching they got in a fire at their berths on the Canadian side of the Niagara River. But now word comes from the operators of the steamship line that they hope to have a *new* sightseeing craft ready for tourists within the month.

The steel hull for the new boat was lowered down the steep and narrow Niagara Gorge road to the Maid of the Mist dock and work was begun immediately on outfitting the new craft with two diesel engines, a deck and wheelhouse.—ROLAND B. MILLER

Thought for the season

We are indebted to a friend in The Department of Commerce for the following:

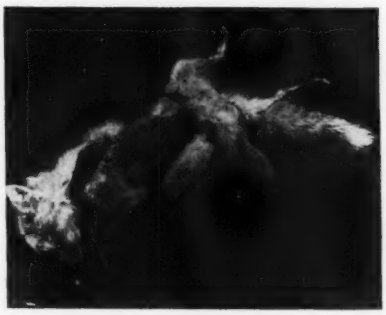
CHINESE PROVERB:

If you wish to be happy for an hour, get intoxicated.

If you wish to be happy for three days, get married.

If you wish to be happy for eight days, kill your pig and eat it.

If you wish to be happy forever, learn to fish.



Three-tailed fox

We have no record of the capture in New York of a green-eyed dragon with the thirteen tails. But on March 8 this Spring a Schenectady man, George Tracy, Jr., while trapping near Niskayuna, took a "three-tailed" fox.

Although dogs beat Tracy to the trap, mauled the fox and tore the belly skin, the pseudo-tails were not destroyed. Actually, the two tail-like appendages are not tails at all but abnormal, ('though completely furred) extensions of skin. This photograph shows the animal as it appeared when brought into our office.

Public fishing

Nearly 20 miles of trout fishing waters have been added during the past year to the total mileage acquired by the Conservation Department in continuation of its public fishing rights acquisition program. This brings the total, acquired and under contract, to 836 miles of the top-rated trout streams in the State.

Major purchases during the past year were: Approximately 3 miles on Big Creek in Oneida County; 8 miles on Butternut Creek in Onondaga County; and more than 4 miles on Plum Brook in St. Lawrence County. In addition, more than 1 mile has been added to previous holdings on the Salmon River in Clinton County, bringing the total acquired on that stream to approximately 7 miles. Balance of new acquisition consists of "fill-ins" on existent public fishing rights streams—particularly the West Branch Delaware River.

Meanwhile, emphasis is being given to broaden the public fishing program through acquisition of access rights on the more important fishing lakes.

Spring planting

Plans for the Spring planting on State forest (reforestation) areas got off to a rather slow start due to old man Winter who created a "deep freeze" in our State nurseries at Saratoga and Lowville. (It was difficult to get the trees out of the ground.) However, shortly after the middle of April conditions in the nurseries began to improve and the planting on State forests went into high gear shortly thereafter.

It is expected that between 5 and 6 million trees will be planted this season, the plantings to take place in approximately eighteen counties of the State. A total of about 5,000 acres will be planted.

Angler for red salmon

Western anglers seem to enjoy catching landlocked Pacific salmon known as red, sock-eye or kokanee. By actual record, computed from creel census studies in Idaho, Lake Pend Oreille yielded 1,335,881 of these fine little game fish to 99,855 anglers in 1953. As has been mentioned several times in THE CONSERVATIONIST, we too are stocking red salmon (on an experimental scale) in several lakes. Survival has been encouraging. At Green Lake (Onondaga Co.) approximately 1,200 averaging about 12 inches long were netted for spawn last Fall.

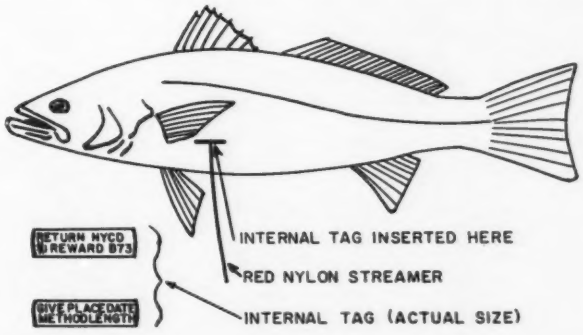
Eastern anglers are not generally familiar with the red salmon or with methods of fishing for this species, which by the way is not protected by any close season or size limit in New York. But fortunately for the possibilities of developing this type of angling, a few of our citizens have been successful. The best and most enthusiastic New York red salmon angler (so far as we know) is H. H. St. John of Lake Luzerne, who took 83 last year (70 landed by himself and 13 by others from his boat). Although the ice was slow going out this past Spring, Mr. St. John caught one salmon April 22 and has taken seven more during early May from 8½ to 12½ inches. Although seldom over 16 inches in Lake Luzerne, red salmon are surprising battlers and more are hooked than are landed.

In the interest of promoting our red salmon fishery, we give you Mr. St. John's formula for catching them. Troll very slowly with two rods in rod holders, with about 125 feet of heavy nylon line out, trolling rig with plastic keel (to prevent twisting), a spinner well ahead of hook (Whitehall, Dave Davis and others have produced results), hook threaded tightly with *very small* worm. (For all of above, see illustration).

Red salmon are plankton feeders and are interested only in small lures. They jump readily for small surface insects and afford a problem for expert fly fishermen. A landing net is essential, as these fish have a tender mouth. A table fish *par excellence*, the red salmon should be kept in a moist cool cloth, not just thrown in the bottom of the boat to spoil in the several hours usually required to get another.

It is to be hoped that more anglers will try for red salmon, using appropriate tackle and patience; also, that they will send us scale samples of any taken (a dozen or more scales, plus measurements and other details). Ages, determined from scales, help check results.

For example, seven samples from 8½ to 12½-inch red salmon from Lake Luzerne this Spring show survivals from Spring plantings (1¼-inch) in 1951 and 1952 and from Fall planting (2½-inch) in 1953. To avoid trouble, remember that red salmon have at least 14 fin rays in anal fin (fin on under side just in front of tail). Other New York salmon (15-inch size limit) have a much shorter fin, less than 10 rays.—JOHN R. GREELEY,



Internal tagging of weakfish

In addition to continuing scale analysis to check growth and racial composition of the weakfish population in our waters, the Conservation Department's Marine Biological Unit will, this Summer, mark and release a number of weakfish with a new type internal streamer tag.

This manner of tagging is based on earlier experiments by Robert A. Nesbit, Fishery Biologist for the Fish and Wildlife Service, which indicated that celluloid tags placed within the body cavity of the fish were successful. The internal tag was a departure from the established use of external tags, such as the Petersen disc, attached with a nickel pin. Nesbit tagged weakfish at Montauk, Chesapeake Bay, and other more southern points. Returns from 8,000 tagged fish varied from 2 per cent to 13 per cent, representing a normal percentage of recapture.

This year weakfish will be tagged with 1" x ¼" plastic internal tags by much the same method as Nesbit used but with one important difference—the tag, which will be inserted through a small slit beneath the pectoral fin to lie near the liver of the fish, will carry an external red nylon streamer so that such released fish can be readily identified when caught.

It is expected that this tagging method will result in information concerning local movements of the weakfish in Peconic and Gardiners bays, as well as a better understanding of Spring and Fall coastwise migrations of this species. With the co-operation of anglers and commercial fishermen returning these tags to the Bureau of Marine Fisheries, 65 West Sunrise Highway, Freeport, New York, this information can be obtained.

—JOHN C. POOLE,
Aquatic Biologist (Marine)

1955 beaver and otter take

Pre-season aerial beaver surveys conducted by Department biologists showed a continuing high beaver population in the Northern Zone of the State. During the 1954 season bad weather interfered to prevent trappers from obtaining an adequate harvest in this area; therefore, a zone-wide and more liberal season was declared this year. The season dates extended from March 12 through April 15 and no bag limit was set. This resulted in an increased take—especially in the counties where last year's season ended on April 3, and where a season bag limit of eight had been set. Nevertheless a good residual beaver population remains.

In the Southern Zone, pre-season inventories pointed to the need for a much more conservative beaver season than in the Northern Zone counties. Open season dates were therefore set to commence March 1 and continue through March 10, and the season bag limit was set at six. The reported take shows a generally successful season, with satisfactory levels of populations remaining after the harvest.

In both trapping zones an open season (coinciding with that for beaver) was declared to permit the taking of otter. No bag limit was set for this species, but the reported take over the years is evidence that the otter continues to hold his own against repeated open seasons.

Beaver

County	Tagged	Trappers
Albany	19	9
Allegany	79	35
Broome	52	31
Cattaraugus	117	59
Cayuga	1	1
Chautauqua	135	56
Chemung	34	14
Chenango	65	30
Clinton	386	73
Columbia	3	1
Cortland	31	14
Delaware	37	17
Dutchess	33	16
Erie	7	3
Essex	581	104
Franklin	868	169
Fulton	276	51
Genesee	0	0
Greene	41	16
Hamilton	866	135
Herkimer	610	113
Jefferson	243	41
Lewis	792	117
Livingston	2	2
Madison	27	17
Monroe	0	0
Montgomery	4	2
Niagara	0	0
Oneida	107	26
Onondaga	6	4
Ontario	28	10
Orange	107	27
Orleans	0	0
Oswego	101	43
Otsego	68	37
Putnam	30	9
Rensselaer	33	12
Rockland	0	0
St. Lawrence	923	154
Saratoga	134	35
Schenectady	2	2
Schoharie	34	20
Schuyler	39	15
Seneca	0	0
Steuben	92	38
Sullivan	134	54
Tioga	34	16
Tompkins	21	10
Ulster	108	36
Warren	235	56
Washington	87	36
Wayne	3	3
Wyoming	0	0
Yates	11	6
County Unknown	2	1
Totals	7,649	1,777

Otter

County	Tagged	Trappers
Cayuga	0	0
Clinton	0	0
Columbia	6	4
Dutchess	2	2
Essex	19	16
Franklin	36	26
Fulton	6	5
Hamilton	46	30
Herkimer	27	16
Jefferson	1	1
Lewis	13	12
Madison	0	0
Oneida	5	3
Oswego	3	3
Putnam	1	1
Rensselaer	3	2
St. Lawrence	28	24
Saratoga	4	2
Sullivan	1	1
Warren	7	7
Washington	0	0
Westchester	3	3
Totals	211	158

Beaver and otter take

Year	Beaver	Otter*
1950	3,034	41
1951	6,002	123
1952	6,731	127
1953	9,194	198
1954	5,826	215
1955	7,649	211

*Does not include otter taken during Fall and Winter seasons.

Eastern tent caterpillar

Judging by our mail, many people are aware that the eastern tent caterpillar seems to be with us in greater than normal profusion this year.

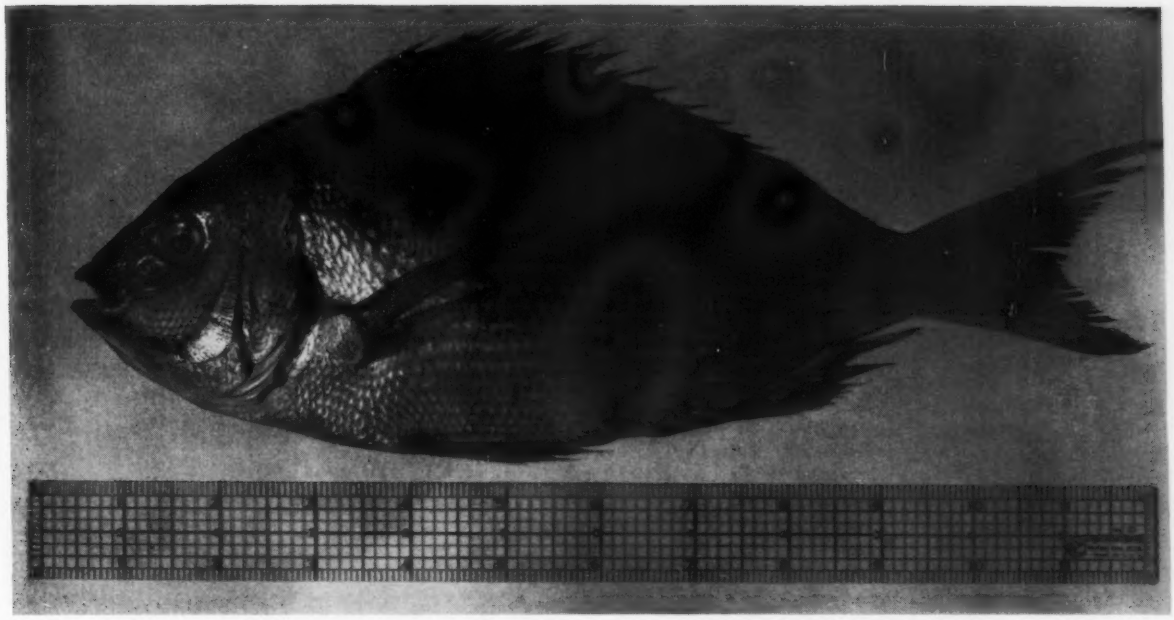
Wild cherries and apples are the favored food plants, but other foliage such as plum, peach, hawthorn, pear, rose and some of the deciduous forest and shade trees come under attack when there is a shortage of the preferred foods. On the encouraging side, the tent caterpillar has many natural enemies including parasitic insects and birds and toads; a bacterial disease known as "wilt" as times destroys enormous numbers of caterpillars; in some years, adverse weather conditions aid in the control of these pests; and finally, *heavy infestations are known to be of short duration in terms of years.*

But most people are concerned about artificial rather than natural controls. Much can be done by collecting and destroying the egg masses during the Winter months—when they can be easily seen on the twigs. (Destruction of 10 egg masses means 1,500-2,500 caterpillars less the next Spring.) And early Spring spraying, using an emulsion containing 2 per cent DDT, is recommended. Lead arsenate (3 pounds to 100 gallons of water with 4 ounces of fish oil or linseed oil as an adhesive to each pound of arsenate) is also known to be effective.

Another method of control involves saturating tents with creosote as soon as the tents have been formed. (Use a brush attached to a long pole.) And destruction of wild cherry seedlings and worthless apple trees materially reduces infestations and prevents further outbreaks.

Most successful campaigns against the tent caterpillar have been accomplished through the collection of egg masses and their destruction. If spraying is contemplated it will be most effective if applied as soon as the tents are large enough to be seen, but it should be noted that where spraying operations are carried on it is unsafe for several weeks to use land for pasturage, particularly when an adhesive has been used.

The New York State Conservation Department does not have a project for the control of this pest because most of the damage is to trees other than the forest type. This is a problem of roadside trees, or orchard, open field, or ornamental trees; the Department's problem is the *Forest* Tent Caterpillar which operates in woodland areas and which (as we have told you in several articles) has been giving us a lot of trouble in recent years.—R. B. MILLER.



Peconic Bay visitor

Saltwater anglers who fish in the Peconic Bays area of Long Island are, this Spring, adding a new species to the list of fishes taken in these heavily-fished waters. This newcomer to the light tackle enthusiast's bag is the Pinfish or Bream, a southern species closely related to our abundant and well-known Porgy. Since the Spring of 1952, at least, charter boat fishermen have been picking up quite a few Pinfish during the May and June run of Weakfish and Porgies. Mostly the Pinfish has been overlooked because it closely resembles the Porgy, its more common cousin, but now that we have pointed out the fish to the boat captains, they have been saving some of the larger specimens for our examination. As many as 50 to 75 Pinfish per boat have been landed from the "chum line" of grass shrimp put over to attract fish within reach of the anglers.

The Pinfish is better known in southern waters. It is common enough there to be of commercial importance in Florida and North Carolina. During 1951, for example, the catch in these States amounted to a little over 1,000,000 pounds. In our waters however, prior to 1952, we knew of the Pinfish only as a rather uncommon Summer visitor and those taken were usually young fish, not more than a few inches long. Our recent Peconic Bay Pinfish, however, are all large adults ranging from 10 inches to almost 14—the maximum for this species.

The Pinfish superficially resembles two other fish taken by sport fishermen in the waters of the Marine District of New York; the aforementioned extremely common Porgy and the less well-known Spot or Lafayette. A Pinfish, fresh out of the water, may easily be separated from the Porgy by its dark shoulder spot (about the size of a quarter) and the 5 or 6 dark vertical bands on its body. In addition, the front biting teeth (incisors) of the Pinfish are conspicuously notched. The Porgy has none of these characteristics. The Spot (locally known as Lafayette) also has a dark shoulder spot back of the gill opening, but instead of 5 or 6 vertical bands this species has from 12 to 15 narrow vertical lines.

The name Pinfish is well deserved by our new saltwater visitor. If you look at the accompanying photograph you will note the extremely sharp, strong, thin dorsal fin spines. And when you catch your first Pinfish, don't get stuck!

—Irwin M. Alperin,
Aquatic Biologist, Marine

Invasion of Albany County

Albany County seems to be reverting to the wild and wooly days of Colonial times. As an indication of this trend we offer the following:

(1.) Late Sunday afternoon, May 8, two young hot rod enthusiasts were touring the country around Berne looking for woodchucks. Within sight of the residence of the Berne Justice of the Peace (Clyde Ball), these two would-be nimrods suddenly spotted what to them looked like a fox in a field adjoining the Switzkill Road. One stopped the car and his companion stuck a rifle from the window and shot the animal. By the time Clyde Ball reached the scene, the two boys had roared off down the road, leaving the animal shot through the chest. The Department is following up this aspect of the incident, but interest here is the species of animal killed.

Mr. Ball immediately called John Yarmchuck, a local garage man, in Berne. He brought the animal to his home and called me, the District Game Manager. I identified the animal as a *coyote* and notified Ed. Maunton, a fur expert at the Delmar Laboratory. Ed. verified the fact that the animal was definitely a female coyote, weighing 41 lbs. and 72 inches from tip of nose to the end of the tail. She had not had pups, nor did she have pups when skinned out.

(2.) We also had a bear damage complaint on Wednesday, May 11. It was found that a bear had tipped over bee hives belonging to M. P. Traphagen, a commercial beekeeper at the Hartly Cook Estate on the road between Unionville and New Scotland. Investigation proved the damage to have been done by a bear, because there were definite signs of bear tooth marks on the hive frames, bear droppings, a clawed tree and footprints along a nearby stream.—Asa H. Smith, *Dist. Game Manager.*

Adirondack Center

The Essex County Historical Society's Adirondack Center, dedicated late in May, has opened at Elizabethtown. The Center contains Adirondack lore including exhibits of industry, conservation and commerce.

Hunting Accidents

HUNTING ACCIDENTS in the year 1953 established a record low for this State: 112. Last year (1954) there were 120 accidents, ten of which were fatal. But in comparing these figures, it should be noted that approximately 33,000 more hunting licenses were sold in 1954 than in 1953—so that the ratio of accidents-to-licenses changed very little.

The table shown here is worth serious study by all persons interested in the prevention of hunting accidents—and that should certainly include all people who buy a hunting license in this State. Of greatest concern to this Department are the statistics which indicate the following:

(1) The number of accidents involving persons under 21 years of age appears to remain fairly constant. But you will note that a large majority of such accidents involved minors who received licenses without undergoing the Junior Hunter Training Program which, according to law, must be successfully passed before the applicant is permitted to obtain a hunting license for the first time. Evidently, a large percentage of these hunters has been evading the law. We feel that the fault lies mainly with the license issuing agent who, under the terms of the law, is required to demand either a previous hunting license or a certificate stating that the applicant has passed the hunter training course, before issuing a license to any one under 21 years of age. The Department will make a most determined effort to correct this situation.

At the present time, the entire Hunter Training Program is being reappraised. It is hoped that this reappraisal will result in more effective co-operation between the agencies involved—this Department, the National Rifle Association, and the instructors operating in the field. Also, that present practices (as well as present law, if necessary) may be revised so as to improve the effectiveness of the program, and at the same time alleviate the headaches of the instructors who, without any remuneration, have shouldered the major part of the work involved.

ACCIDENTS re GAME PURSUED	1953	1954
Big Game	18	22
Small Game	45	40
Woodchucks	7	7
Game Birds	20	21
Waterfowl	3	2
Crows	0	0
Other and Unknown	19	28
Total	112	120

MANNER OF ACCIDENTS	1953	1954
Self-inflicted	29	23
Shot by Companion	75	78
Unknown	8	19
Total	112	120

REPORTED CAUSES OF ACCIDENTS	1953	1954
In Line of Fire	38	48
Carelessness	35	24
Richocheting	14	14
Mistaken for Game	10	15
Loading or Unloading Gun	8	1
Others and Unknown	7	18
Total	112	120

We hope that our plans will be far enough along so that we will be able to publish an article in the next issue of this magazine which will define them as closely as possible. Meanwhile, any suggestions from those who have been active in the program would be most welcome.

—BRYAN BURGIN,
Asst. Dist. Game Protector

HUNTING ACCIDENTS Year	Fatal	Non-Fatal	Total	Licenses Sold
1950	13	100	113	799,623
1951	17	124	141	835,062
1952	14	106	120	883,580
1953	7	105	112	903,646
1954	10	110	120	938,716
ACCIDENT-TO-LICENSE RATIO				
1953	One to 129,000 licenses	One to 8,600 licenses		
1954	One to 93,690 licenses	One to 8,500 licenses		

	NO. OF MINORS TRAINED		TOTAL TRAINED	MINORS INVOLVED IN ACCIDENTS				
	By Protectors	By NRA Agents		Trained	Untrained	Total	Adult	Total
1952	2,500	17,111	19,611	10	22	33	79	120
1953	2,450	18,977	21,427	11	21	32	80	112
1954	1,382	22,813	24,195	12	23	35	85	120

Pharsalia grouse trials

The snow which still prevailed on the Pharsalia Game Management Area modified the running of the Spring grouse trials sponsored by the Central New York Grouse Trial Asociation. All open stakes were cancelled, and the Novice and Perry B. Duryea Grouse Bowl Amateur All-Age Stakes were run on a two-course grounds. Quail, furnished by the Association provided the bird work.

Mistress Prettybones, owned by Dr. John Powers of Cooperstown, won her second leg on the Perry B. Duryea Grouse Bowl. In 1952 Mistress Prettybones won the National Grouse Dog Championship which was run on the Pharsalia Area that year.

Second place went to Mr. Mikado, owned by Jack Koerner of Ilion. (In 1953, Mr. Mikado was winner and Mistress Prettybones was in the number two spot.) Third place went to Cedarview Flikker owned by Drs. Jim and Tom Flannigan of Norwich.

The Novice Stake showed the increased interest in grouse trials. This stake ran all day Saturday, with many of the handlers having their first taste of the grouse circuit. First two places went to Binghamton dogs; Bill Netherton's Beaugin Ricky was declared winner and Walt Hannan's Snowboy was second. Ginger Snap, owned by Mike Rapalee of Watkins Glen was third, and So Big Chief, owned by Bill Bartlett of Greene, was fourth.

The Novice Stake, which is open only to dogs which have never won a grouse stake before, is attracting many new handlers to the grouse trials. With the "name" dogs eliminated, the competition is presumably not as stiff and the newcomers feel more at home. Possibly it is due to weather and the fact it runs before the Amateur All-Age Stake, but the Novice Stake has consistently produced more bird work, 'though not always as polished, than the bigger associated stakes.—PAUL M. KELSEY, *District Game Mgr.*

In memoriam

Please be advised I have some information that I thought would be nice to put in the next issue of THE CONSERVATIONIST regarding the late Robert Otty in the instructing of boys in the safe handling of fire arms.

He instructed 937 during the year 1954, assisted by Special Game Protectors Harry Burgess of Albany and John Edinburg of R. D. West Albany, and Roy Inerson of Schenectady, who is Secretary of the Watervliet Fish and Game Protective Association.—JACOB G. KRUG, *Game Protector*

World's record white-tail

The New York State record white-tailed deer head now apparently has turned out to be the world's record as well—and by a wide margin.

The huge set of antlers was measured officially in early May by Grancel Fitz of New York, who helped develop the official scoring system for the Boone & Crockett Club which keeps tabs on the records for North American big game. Using king-size calipers and the various precision paraphernalia with which he has measured hundreds of other trophies from walrus to brown bears, Mr. Fitz (who is a noted big game hunter himself) scored 198⅜ for the head. It was the deer killed in Allegany County in 1939 by Roosevelt Luckey of Hume (for other pictures and story of this head see THE CONSERVATIONIST for Oct.-Nov., 1952 "New York's Biggest and Best," and Dec.-Jan., 1955, "The Big Buck and the Little Buck").

This apparently new world mark, awaiting official confirmation when the Boone & Crockett Club publishes its 1955 ratings, beat the previous record of 183 representing an enormous Texas deer killed in 1949. Third world's mark represents a New Brunswick deer taken in 1937.

The mathematical system used to score deer heads in general is based on totals for lengths of each antler's main beam, plus lengths of all normal pattern points, circumferences of the main beam between the points and the greatest spread measured inside the beams. The differences in corresponding measurements for each antler plus the lengths of all abnormal points (representing the penalty for nonsymmetry) are then subtracted from the grand total and the result gives the final rating. Deer measuring 140 are considered in the record class. Incidentally, the main beams of the Luckey head each measured nearly 30 inches!

LICENSES

1954 License or Permit	Number	Revenue
RESIDENT		
Hunting and Fishing	264,481	$ 931,415.27
Hunting	245,708	512,029.78
Fishing	502,474	1,042,972.73
Free Fishing	21,350	
Free Fishing - blind	33	
Trapping	12,337	24,465.88
Big Game	383,550	778,169.17
Back Tag (lost)	97	24.25
Archery	14,439	71,783.60
NON-RESIDENT		
Hunting and Fishing	789	11,673.50
Hunting	12,749	132,007.39
Fishing	28,425	147,056.62
3-Day Fishing	13,033	32,088.65
Trapping	9	222.03
Big Game	8,073	77,655.08
Archery	885	8,556.73
ALIEN		
Hunting and Fishing	90	1,393.40
Hunting	628	6,689.82
Fishing	1,680	9,173.69
3-Day Fishing	101	259.75
Trapping	2	50.00
Big Game	192	1,885.39
Archery	23	226.00
Lost License Certificates	6,587	2,113.74
Muskalonge	20,578	2,327.35
SPECIAL LICENSES		
Propagation - Sec. 154-1	3	3.00
" (no fee)	120	
Propagation - Sec. 154-2	1,262	1,262.00
" (no fee)	22	
Importation - Sec. 172-4	1,063	1,063.00
Transportation - Sec. 172-5	8	8.00
Guide - Sec. 183	494	988.00
Ferret - Sec. 189	121	605.00
Marsh - Sec. 190-4	67	67.00
Fur Breeders - Sec. 193	296	1,480.00
Special Dog Training - Sec. 195-3	65	650.00
Taxidermist - Sec. 197	132	660.00
Plumage - Sec. 197	176	352.00
Game Breeders - Sec. 372	586	1,465.00
Importation Domestic Game - Sec. 373	57	285.00
Shooting Preserves - Sec. 375	257	3,509.00
Net Licenses - Inland Fisheries	5,224	15,478.80
Trout Tags	1,905,500	19,055.00
Game Tags	146,223	7,321.15
Marine Fisheries Receipts	3,119	28,576.61
Tax on Shellfish lands		530.67
Rentals of Shellfish lands		6,103.73
TOTALS	3,602,878	$ 3,883,702.78

THE average sportsman can be excused for not knowing about all the various kinds of permits and licenses issued by the Conservation Department. His requirements probably haven't gone beyond his familiarity with the hunting, fishing, trapping, archery and big game licenses obtained from the regular issuing agencies —the city, county, town and village clerks —or other authorized issuing agents. But the average sportsman *should* know that the Department is in big and far-flung business with regard to issuing permits regulating the exploitation of our natural resources. The following conversation is typical:

"I want to buy a license."

"Yes. What kind? You'll have to be specific."

"Well, now, what have you got—other than hunting, fishing and trapping? Oh, yeah, I know you have the archery licenses and the big game tags."

"Yes, we do. And we also have some seventy other kinds of licenses. Just to name a few: Muskalonge, commercial game breeder, transportation, guide, ferret, marsh, fur breeder, special dog training area, taxidermist, plumage, trout hatchery, importation of domestic game, shooting preserve, inland commercial fishing, and . . ."

"Whoa up! That'll do. I had no idea you dealt in so many licenses and permits. Must keep you people hopping."

We do. It does. And that's not all.

There's also the sale of trout tags, game tags, receipts from marine fisheries, the tax on shellfish lands (and rentals on same). Revenue from licenses and permits goes into the Conservation Fund, as does revenue from fines and penalties.

Generally speaking, the so-called special licenses are issued through the Division of Fish and Game in the Conservation Department's central office in Albany. Exceptions are importation, transportation, muskalonge, guide and ferret licenses—which our branch offices or local clerks would issue. Identification tags covering the importation of domestic and foreign game are sold at our New York office.

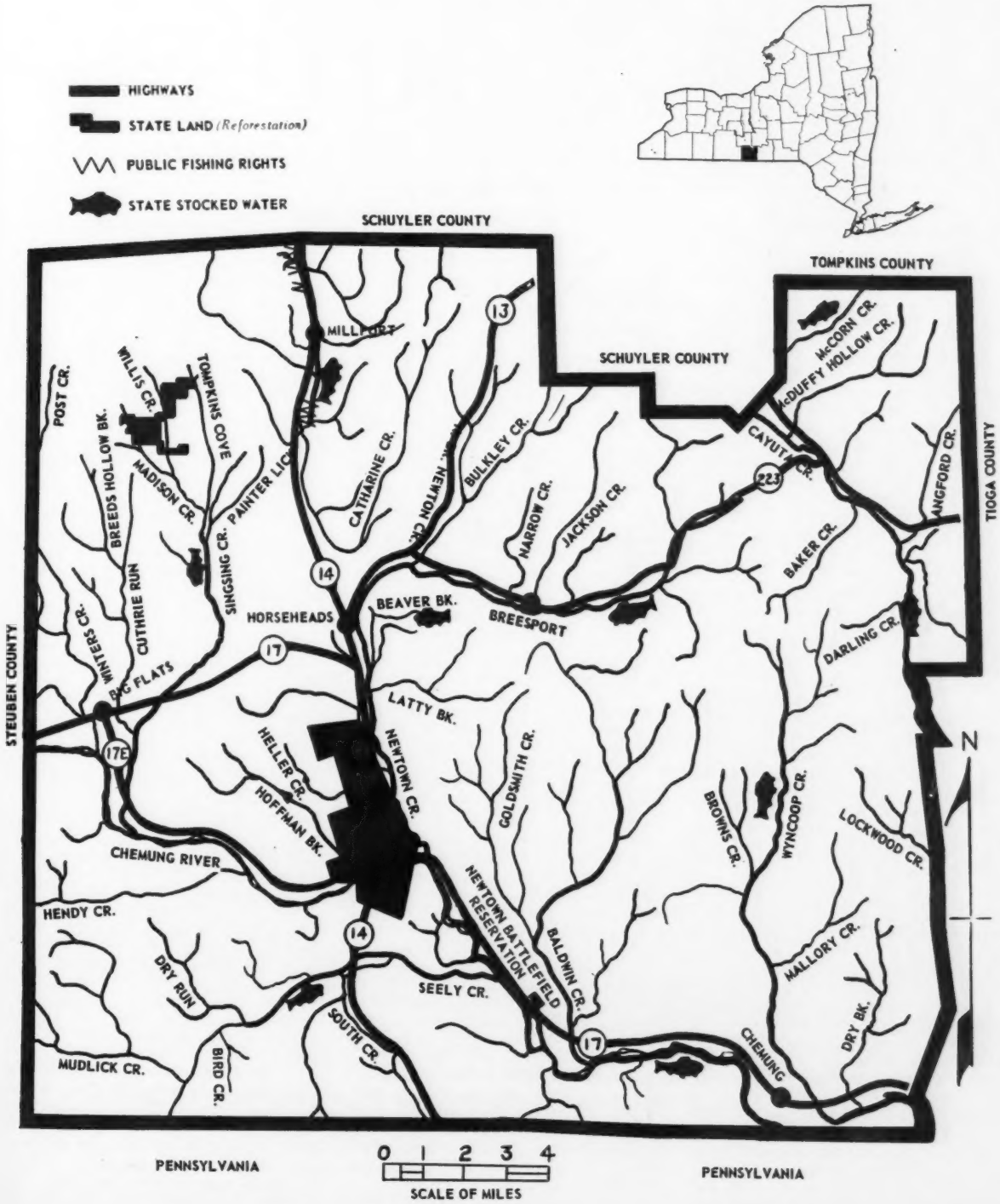
Our Marine Fisheries office at Freeport handles the certification and leasing of shellfish lands, diggers' permits to take shellfish from public shellfish areas, licenses to resident and non-resident lobster fishing vessels, licenses to menhaden fishing vessels, licenses to non-resident vessels to take food fish, nets licensed to take menhaden, shad and herring in Richmond County waters, filings of applications to lease shellfish lands, permits to ship shellfish, licenses to take crabs by dredging, recordings of surrendered franchised shellfish lands. (Gear for commercial fishermen in inland waters is licensed through our Albany office.)

WE'VE confined ourselves to the many licenses issued through our Division of Fish and Game. There are others. The Department's Division of Water Power and Control (at 110 State Street, Albany) took in last year more than a million dollars from five corporations for water power licenses; smaller amounts from various water districts and from Long Island well drillers, plus fees for certifying records, furnishing copies of well permits and copies of maps and bulletins—for a grand total of $1,964,535 in 1954.

The Conservation Department is definitely in the licensing and permit business. Take a look at the accompanying tabulation.

—ROLAND B. MILLER

Chemung County



LETTERS

To The Editor

A basic question

Gentlemen: A question has plagued me for some time and I would greatly appreciate your clearing it up.

I have read in your magazine that there are too many deer for the Winter food supply in places such as the Adirondacks and that an increase in hunting activity would be beneficial. On the other hand it is very bad for deer to be killed in these regions by dogs, coyotes, and other animal predators.

Why then is it good for the deer herds to be thinned by humans, and detrimental for the same job to be done by animals?

Robert Sheffield, Binghamton

• *The Conservation Department is expected to maintain a maximum supply of game for the use of sportsmen who, by purchasing various licenses, largely support our Division of Fish and Game.*

As to the biological aspects of the question you raise, we here in the Department are most keenly aware that no animal is either good or bad; it simply lives according to its habits. We don't blame a coyote, for example, for pulling down a deer. But when depredation by coyotes substantially reduces the number of deer available to sportsmen, then we feel we are obliged to do something about it.—Editor

A point of law

Dear Sir: As a subscriber to THE CONSERVATIONIST, I wonder if I may have a question answered. It seems that a certain fellow owns a shore lot along Lake Ontario, and he has been bragging to the effect that he can fish off his land and does not need a fishing license. Now I always thought that as long as a person was fishing in State or public waters, he had to have a license to do so, and in some cases a special permit. This joker may own the land he is standing on, but his line is in the same body of water that the rest of us have to produce a license to fish in. The only person not needing a regular fishing license (as I see it) would be a person who owns his own pond, or small lake, etc. If the above mentioned person can fish in Lake Ontario without a license, then I say that it is unfair to the rest of us who have to produce one to take the same fish he is pulling out of the lake for free

A license entitles you to fish or hunt, and at the same time regulates the amount or bag you can legally take. So, if a person does not need a fishing license, what in the world can you impose in the way of regulation? The Indian has to go by regulations now, from what I read in the papers, which is no more than right; even 'though they hunt and fish on their own reservations, they still do not own the game or fish, but rather it belongs to all of us. But this guy is no Indian and does not live on a reservation. I am enclosing a stamp, for which I would like your reply. Your magazine is tops. I gave two gift subscriptions during the past Xmas. I can think of no better way to build a sportsman.

Charles P. Germaine, Watertown

• *We turned this one over to the man who ought to know—with the following result:*

In reply to your recent letter in relation to a person owning property abutting on Lake Ontario, this is to advise you that such person could not legally fish in the waters of Lake Ontario from his own property; such person would require a New York State license to fish.

Section 180, subdivision 9 of the Conservation Law provides that "Citizen resident owners and lessees and citizen members of their immediate families actually occupying and cultivating farm lands, and Indian resident owners and resident members of their immediate families actually occupying and cultivating such lands, shall have the right to hunt and take birds and quadrupeds except wild deer and bear and to trap fur bearing animals and to take fish by angling, spearing, hooking, long bow or tip-ups from such farm lands and the waters thereon when and in such manner as it is lawful, without procuring such resident license."

I call to your special attention the wording "and the waters thereon". Unless the water is actually on the farm lands of the owner, he does not come within the exceptions of the law in relation to a license.

In reply to your second question, this is to advise you that citizen resident farm land owners actually occupying and cultivating such farm lands are only entitled to take such daily bag limits and season bag limits as are provided for any person who requires a license to hunt or fish.

—A. J. Vormwald, Chief,
Bureau of Law Enforcement

The facts

Dear Sir: Will you please advise in your next issue of THE CONSERVATIONIST magazine why Sandburg Creek in Sullivan County has not been stocked with trout for the past several years. This stream was noted at one time for the very large trout which could be caught there. But as for fish now, one might better draw water in a tub and fish in that and save the expense and time of fishing there.

Kenneth S. Bawker, Middletown

• *Sorry, but your statement that Sandburg Creek hasn't been stocked in the past several years doesn't jibe with the records. The latest stocking sheet shows that last October 6,910 brown trout and 602 brook trout were stocked. And our records show stockings of browns and brooks regularly since 1941 through 1953. We enclose the last stocking report.—Editor*

The Little Hoosick

Dear Editor: Could you give me some information? Was the Little Hoosick River stocked this year with trout in the vicinity of Petersburg and Berlin? I've heard different rumors as to the reasons why it wasn't stocked this Spring. One is that it was overstocked last year and therefore wasn't allotted any fish this year. Another is that because of the new flood control project (now in its infancy) the Little Hoosick isn't going to be stocked in the near future.

Here is another trouble spot. Is it true that Lake Tamagrin or what is known as Black River in the Berlin Mt. Game Refuge was drained last fall. Has the Conservation Department any plans for restocking it? It was a beautiful fishing spot and the trout were fine eating. Don't you think it should be told if it was drained, as I saw 15-20 fishermen there just a few days ago. All expecting to catch a trout.

I hope all these rumors are false but would like the truth. I've fished this terri-

tory since childhood and am surprised to hear all the rumors being circulated.

Floyd Castle, Troy

• *Little Hoosick was stocked on April 20 and 21; from the falls up with brook trout and from the falls down with brown trout. It will get a stocking of rainbow fingerlings in the Fall. The socalled game refuge pond was drained; it is necessary to drain this pond every few years to clean it up. However, on April 24 it was restocked with brook trout.—R. B. M.*

Trapping seasons

Dear Sir: I do not know whom to thank for the wonderful trapping season we had in the Southern Zone this past season. All I can say is it is a good thing that I do not depend on trapping for a living.

I can sum it all up in one statement: How about closing the trout season in May, June, July and August and reopening it up in December, January, February and March. It should be as good "fishing" through the ice as it is "trapping" through the ice. (Print this letter if you have nerve enough.)

"Disgusted Trapper" Martin Leonhardt, Duanesburgh

• *Unfortunately, the Conservation Department is not able to control the weather, and yet we are required by law to stipulate well in advance the closing of the season for the trapping of muskrats. Yes, we have nerve enough to publish your letter.—Editor*

Dogs and deer

Dear Editor: Now for your records or for anyone else to read I make this statement: Since Sept. 1st, 1930 (when I left the shops and came on this lake as a caretaker of private property) I have killed 23 dogs running deer. Of these dogs 7 had a license, 9 had collars, and the rest were just dogs —the owners didn't think enough of them to pay for a license for them.

Yes I am a dog lover; there is nobody that thinks more of a dog than I do. But I will not stand by and see deer run by a dog.

Henry R. Hinkson, Moody

The baby otter

Dear Sir: Seeing that it is so rare a person ever finds a baby otter, I thought you might like to have this picture. The mother must have been caught or frightened, as I left the baby otter three hours and then returned for it.

I figure he must have been 3 days old when found April 15, 1955. He measured 5½ inches long then. Today (May 18), he measures 14 inches. It took 30 days for him to open his eyes.

The little fellow has thrived to become an active, healthy and playful otter through the guidance and suggestions of our local veterinarian, Doctor Bouton.

I think the oddest part of all is that I have a 5-year-old cocker spaniel which is not spayed and never mated; she adopted the otter and now gives milk freely. I did not feel that this was enough, so bottle feed the otter every 3 hours. Formula: 1 pt. milk, 1 raw egg well beaten, 4 tbs. cream, 1 tbs. lime water, 10 drops cod liver oil, 5 drops Z madrops. The otter drinks 1 to 2 ozs. per feeding.

I would like to get a permit to keep this otter, as it certainly would break my heart to think of him ever being trapped, and after all of our love and care he is not going to be afraid of humans. I do not intend to cage him, but would like to let him run free with my dogs and cats on my own land located in the woods, if you can suggest how to help me to get this permit.

Mrs. Pearl Prevost, Lake Clear

• *With her letter, Mrs. Prevost enclosed a clipping from her local newspaper which indicated that she had contacted our Adirondack central office (at Ray Brook) for instructions as to what to do with the baby otter. She was advised to care for it (pending further instructions), since to release it at that stage would almost certainly have meant its death.*

But The Department very rarely grants permits to hold such animals in captivity; and then only for scientific purposes. The Division of Fish and Game has therefore requested Mrs. Prevost to turn over her otter to The Department, which will give it a good home at its wildlife refuge in Delmar.

We appreciate very much, however, Mrs. Prevost's attitude and interest. Sentimentally, we are on her side and, would like to have her keep the otter. But practically, we know from long experience that such permission granted by The Department would set a dangerous precedent. The general rule is that young wildlife prospers best without human interference. But to enforce this rule is one of the most difficult and disagreeable jobs confronting our Game Protectors and other field men.—Editor

Loads of logs

Dear Sir: In your April-May issue of THE CONSERVATIONIST you had a picture of a large load of logs sent in by M. I. Chaufty of Carthage, N. Y. I believe there is an error in the location of the picture. Rather than being on Cranberry Lake, it was taken at Brandreth on Carlson's Landing, Mac A. Mac Corp. Load consisted of 298 logs, 21 1/8 cords measured. I am enclosing the complete picture which might be of interest to your readers.

Photograph thru the courtesy of Bob Lyng and Bob Duflo of Lowville, N. Y.

Randolph Kerr, Forest Ranger, Glenfield

Dear Sir: Looking at the picture of the load of logs on page 41 of the current issue (a good one), reminds me of some of the loads I saw and drove to the landing during the winters of 1906 and 1907, which I spent in the woods for the Brooklyn Cooperage Co. These logs were shipped by Rail to St. Regis Falls. Unfortunately I have no pictures, just memories.

Michael D. Foley, Glens Falls

Legislation, 1955

Fish

Fishing—Saratoga County

Section 210-10b (Effective July 1, 1955): Prohibits all fishing in trout waters of Saratoga County from March 1 until opening of trout season.

Bait Minnows

Section 217-1 (Effective July 1, 1955): Adds mudminnows (family *Umbridae*) to list of species which may legally be taken for use as bait.

Fishing—Onondaga County

Section 210-10b (Effective July 1, 1955): Prohibits all fishing in trout waters of Onondaga County from March 1 until opening of trout season.

Trout Size Limit—Oswego County

Section 210-10 (Effective January 1, 1956): Adds Oswego to group of counties in Adirondack area wherein Department has authority to set minimum size limits for trout. (Note: Presently sets minimum size limit for trout in other counties of that group—6 inches.)

Rainbow Trout—Keuka Lake Outlet

Section 210-10a-(r) (Effective March 12, 1955): Repeals paragraph (r), deleting Keuka Lake Outlet (from Seneca Lake upstream to first falls impassable by fish, Yates County) from list of trout waters wherein special regulations govern taking of rainbow trout. General provisions of law now apply in this section of Keuka Lake Outlet.

Interstate Waters, Delaware River

Section 210-17 (Effective July 1, 1955): Provides authority for Conservation Department to join with Pennsylvania to establish uniform seasons, size and creel limits for fish in that portion of the Delaware River forming boundary line between New York and Pennsylvania.

Closing Drought-Threatened Streams

Section 151-16 (Effective July 1, 1955): Extends, without time limit, the authority of Conservation Department to close, by order, any waters of the State to angling whenever the Department determines that fish life in such waters is in imminent danger of depletion because of low water levels caused by drought.

Lake George and Certain Tributaries

Section 210-1(a) (Effective June 1, 1955): Provides that open season for black bass in certain tributaries to Lake George inhabited by that species shall be same as for Lake George—August 1 to October 31. Law lists such tributaries as follows: Huddle Brook, Indian Brook, Northwest Bay Brook, Hague Brook and Crandale Brook from their mouths upstream to Route 9N; West Brook from mouth upstream to Route 9; East Brook from mouth upstream to Route 9L; Dunham's Bay Brook from mouth upstream a distance of one mile, and Shelving Rock Brook from mouth upstream to First Falls. This law also provides a creel and possession limit of not to exceed thirty-five bullheads on Lake George and in the specified sections of tributaries thereto as listed above *re* black bass, and in addition, in the waters of Loon Lake.

White Perch

Section 210-12 (Effective July 1, 1955): Provides that white perch may be taken in any number in any waters of the State *except* in Westchester and Putnam counties where the creel limit is set at twenty-five per day.

Rainbow Trout—Skaneateles Lake

Section 210-10 (Effective January 1, 1956): Amends the law to extend the open season for rainbow trout in Skaneateles Lake to December 1. This law will, next year, provide an open season for rainbow trout in Skaneateles Lake to run from April 1 to December 1, but does not apply to the tributaries to that lake.

Game

Deer Jacking

Section 210-10 (Effective July 1, 1955): Clarifies wording of the law prohibiting hunting or taking deer or bear by aid of artificial light. Under the terms of this law, as amended, mere possession of artificial light on lands inhabited by deer is not illegal.

Deer—Erie County

Section 185-c-5 (Effective July 1, 1955): Clarifies the law, defining more accurately the portion of Erie County wherein there shall be no open season for deer.

Raccoons Damaging Property

Section 191-3 (Effective July 1, 1955): Provides, until 1958, authority for landowners or occupants of land, or their authorized employees on such lands to take, by trapping or shooting, raccoons when injuring such occupied property. Raccoons so taken must immediately be buried or cremated. (Note: This law extends State-wide the authority previously granted only in the Southern Zone of the State.)

Cottontail Rabbits, Varying Hares

Section 189-1 (a) (Effective July 1, 1955): Extends until 1958 the authority of Conservation Department to set, annually by order, open seasons and bag limits for cottontail rabbits and varying hares.

Squirrels

Section 188-(d) (Effective July 1, 1955): Extends until 1958 the authority of Conservation Department to set annually, by order, open seasons and bag limits for gray, black or fox squirrels.

Ruffed Grouse

Section 202-3 (a) (Effective March 13, 1955): Amends the law authorizing the Conservation Department to set, by order, open seasons for ruffed grouse of not less than fifteen nor more than *sixty* days. Previous maximum possible was forty-five days.

Deer & Bear

(The Annual Big Game Law)

Section 185-1 (Effective July 1, 1955): Law makes the following provisions.
(1) In the Northern Zone, the same season for buck deer and for bear as last year—Oct. 25-Nov. 30.
(2) In Southern Zone, provides for uniform opening date (November 21) in Catskill area and Central and Western area. Sets December 6 closing date in Catskill area and December 3 closing date in Central and Western counties.
(3) Provides a later (but same length) season for bear in Catskill counties of Delaware, Greene, Ulster and Sullivan—to run November 21 to December 21.
(4) Continues the bow and arrow season for deer-of-either-sex in Westchester County for period November 15-December 15 (same as last year).
(5) Prohibits all deer hunting in Nassau, Suffolk and Montgomery counties and in Albany County east of the N. Y. Power and Light high tension lines.
(6) Authorizes the Conservation Department to declare deer-of-either-sex seasons in Southern Zone counties (except in the Counties of Ulster, Washington, Columbia, Putnam, Sullivan and Westchester) provided, in event of such season, that *all* deer hunting in the counties affected shall terminate with the close of such deer-of-either-sex season; and provided further that declaration of a deer-of-either-sex season shall affect not fewer than 8 counties or parts thereof if in a single unit, nor fewer than 4 counties or parts thereof in each unit, if in two or more units.

Hunting—Putnam County

Section 171-3 (Effective March 18, 1955): Amends law to add Putnam to

Rockland and Nassau counties wherein it is illegal for all, other than the owner or lessee of a dwelling house or member of their immediate family or employee residing in such house, to discharge a firearm within five hundred feet of such residence.

BIG GAME HUNTING—ALBANY COUNTY

Section 185-2 (c) 3 (Effective July 1, 1955): Prohibits the hunting of deer and bear on a tract of land surrounding the Albany City (Alcove) reservoir, Albany County. Under the terms of this law, landowners or lessees and members of their immediate families actually occupying and cultivating the land within this designated area may hunt deer and bear from November 21 through December 6.

HUNTING—WESTCHESTER, ROCKLAND, NASSAU COUNTIES

Section 171-3 (Effective March 25, 1955): Prohibits the discharge of firearms within five hundred feet of any inhabited dwelling except by owner or lessee thereof or member of immediate family or employee or guest in such residence with consent of owner or lessee. Law does not apply to discharge of firearms or pistol, rifle or target ranges operated or maintained by law enforcement agencies or by organized membership corporations.

REGISTERED MUSKRAT MARSHES

Section 190-5 (Effective July 1, 1955): Broadens management opportunity on muskrat marshes registered with Conservation Department by empowering Department to permit owners or lessees thereof to trap muskrats for periods of up to twenty days *prior* to regular open season for muskrats, but not prior to November 2, and up to twenty days following such open season but not after April 10. These same provisions apply to registered marshes in counties wherein no regular open season may be provided in any year.

Fish & Game—General

SERVICEMEN—HUNTING & FISHING

Section 180 (Effective July 1, 1955): Extends until July 1, 1956 the right of those of the U.S. Armed forces in active service when in uniform or when carrying proper service identification to take fish, game and quadrupeds within the State, except deer and bear, during respective open seasons, without license.

TAKING FROGS BY MINORS

Section 180-9 (Effective July 1, 1955): Permits minors, without license, to take frogs by any lawful means except shooting, during open season therefor.

RABIES CONTROL

Section 169-2 (Effective April 1, 1955): Continues until March 31, 1957 the authority of State of New York, acting through Departments of Health, Conservation, and Agriculture and Markets, to defray, (with special appropriation for that purpose) one-half the cost of rabies control programs in counties certified by the State to be imperiled by rabies infection of wild foxes or other wildlife populations.

RECODIFICATION

Article 4 (Effective July 1, 1956): Rearranges provisions of Conservation Law relating to fish and game; clarifying language, correcting inconsistencies and

Governor Harriman signs the Recodification Bill as Deputy Commissioner Mahoney watches closely

eliminating duplicated or superseded provisions. (Note: Makes no substantive changes in the law but paves way for future revision of the Conservation Law).

CHAUTAUQUA LAKE

(Effective April 29, 1955). Carrying an appropriation from general fund of $250,000, this law directs the Conservation Department to initiate studies and investigations to determine feasibility of aquatic weed control in Chautauqua Lake and of dredging that lake and the Chadakoin River from Chautauqua Lake to Warner Dam, City of Jamestown.

Forestry

YOUTH REHABILITATION

Section 314 (Effective April 1, 1955): Creates a youth rehabilitation facility and authorizes the Commissioner of the Department of Correction to establish conservation work camps for the care, treatment, education, rehabilitation, security and correction of males between the ages of sixteen and twenty-one convicted of a crime or offense. Such camps may be established upon sites controlled by the Conservation Department to accomplish work on technically supervised conservation projects on publicly-owned land as designated and approved by the Conservation Department.

TIMBER SALVAGE

Section 36-50 (Effective July 1, 1955): Extends to March 31, 1956 the time during which the Conservation Department may contract for salvage removal of wind-thrown timber on Forest Preserve Lands. Will permit continuance of task of reducing forest fire hazard on such lands created by the "Land Hurricane" of November, 1950.

PANTHER MOUNTAIN DAM

Concurrent Legislative Resolution, Second Passage: Provides that not to exceed fifteen hundred acres of State-owned Forest Preserve lands in Herkimer County may be used for construction and operation of Panther Mountain Reservoir to regulate the flow of Moose and Black rivers, in accordance with plans approved by the Water Power and Control Commission. (Note: Action by the Legislature in approving, for the second time, this resolution assures its presentation to the People of the State as a Constitutional Referendum in the general election, 1955.)

FOREST PRACTICE STANDARDS

Section 60-d (Effective April 27, 1955): Amends the Conservation Law *re* establishment and operation of District Forest Practice Boards to provide that such Boards shall consist of not less than five members from each District. Establishes a three-year term of office for board officers which shall include a chairman, a representative to the State Forest Practice Board, and may include a secretary and a treasurer. Provides, also, for the addition of the chairman of the State Soil Conservation Committee as an ex-officio member of the State Forest Practice Board.

Soil & Water Conservation

SOIL CONSERVATION

Section 4-(3) Soil Conservation District Law (Effective April 29, 1955): Amends the law to: (1) Increase compensation to farmer members of Districts from $10 to $20 per day for each day spent in performance of their duties; (2) provide for designation of a District Secretary and outlines his duties; (3) add to functions of District Offices and Employees of Districts, and provide that Board of Directors of a Soil Conservation District may authorize treasurer to establish and maintain a petty cash

fund of not in excess of $20. For specific District purposes; (4) Provide that Directors, Officers and Employees of S.C.S. District shall be eligible to secure Soil Conservation Benefits on their properties.

FEDERAL FLOOD CONTROL PROJECTS

Chapter 862, Section 8, Laws of 1936 (Effective April 27, 1955): Provides that the State Superintendent of Public Works may consent to authorize municipal maintenance and operation of minor flood control projects, or portions of a major flood control project that may have been normally turned over to the State by the Federal government.

COUNTY WATER AGENCIES

Section 251, County Law (Effective April 29, 1955): Amends County Law relative to authority of County Boards of Supervisors to contract with public authorities for the construction and development of water supply and distribution of water, setting up new regulations to guide such boards in assessments of water rates in co-operation with said public authorities and providing for public hearings *re* rates.

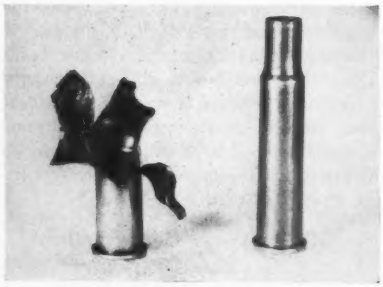
—A. W. BROMLEY

It's a small world

Gentlemen: In your Feb.-Mar. issue you published on page 26 a photo of three heavily-burdened men entering the woods in the rain. Only their backs and packs are visible. I am the poor little wet man in the middle. Could you furnish me with a print so that I may adorn my den?

I. Catalano, Brooklyn

• *He earned it.—Editor*



Playing with fire

Dear Editor: This picture is of a 30/40 Krag Case—of what happens after being filled with 3 rolls of caps and being fired with a nail in the open end. I just thought the picture might be a good lesson in safety, and a general lesson to young folk who fool around with firearms and ammunition.

Other than the result of the blown case, the boy involved in this "experiment" was badly cut and burned—but acquired the knowledge not to do that again.

Neil Newcomb, Baldwinsville

Fish from Lake Champlain

Dear Sir: Back in June of 1949, a friend and I were fishing in Lake Champlain just off Split Rock, which is near Essex. We were trolling with live minnows where I caught the fish shown in the enclosed snapshot. The water is very deep at this point. I was not certain as to the species. My partner, Blair Gilbert of Waterford, thought that it was a landlocked salmon. We then proceeded to the Marine Base at Essex and showed the fish to several of the natives there. They all expressed the opinion that it was a landlocked salmon and ventured to say that it was the first they had heard of being caught in that section in years.

In any case, my fish was excellent eating; the flesh was orange colored. He put up quite a battle, I recall, as it took me about 15 minutes to net him.

W. H. Wilson, Schenectady

• *We are informed by our aquatic biologists that this is not a landlocked salmon. Study of the photograph under a magnifying glass shows multiple spotting, spotting on tail, and short pectoral fins, all of which adds up to the fact that this is a rainbow. But this is just a judgment based upon a study of the photograph; our aquatic biologists would want to see the fish itself before making positive identification.*

Again referring to the photograph, the fish seems to have a silvery appearance which extends over the spots. This often happens to rainbows in many waters, but is most frequent in white water lakes.—Editor

Groundhog and gravy

Gentlemen: Last November-December issue you asked for a recipe for cooking woodchuck. In your next issue you published one. It amazes me how anyone can possibly ruin food by soaking it overnight in salt water, then parboil before finally frying same.

A much simpler way (and a way that permits the meat to taste like meat) is to sauté onions—about a half cup—and a few cloves of garlic in brown butter or margarine. The woodchuck can be roasted in a covered roasting pan or prepared on top of the stove.

The woodchuck may live in a hole in the ground, but they are clean animals and vegetarians, while that great favorite of many people—the chicken—lives on top of the ground and eats bugs, worms, even manure as eagerly as mash and corn. Personally, I'd rather eat woodchuck.

I don't expect to see this letter published. Probably be too revolting.

Vivian C. Tange, Northville

• *We're tough; we can take it.—Editor*

The new rate

Gentlemen: I am sorry to note you are increasing your subscription rate. You may be defeating the purpose for which the magazine was started.

While I personally like the quality of the paper in your magazine and the beautiful pictures you print, there are hundreds who should be getting the magazine to learn something about Conservation. But, they will think twice before paying $2 per year for 6 issues.

I will watch your progress with great interest.

B. R. Lipe, East Greenwich

• *Before deciding to increase our subscription price, we considered the very possibility which you mention—that we might be defeating our own purpose. But we have no alternative, and now can only hope that our subscribers will play along with us, as you have elected to do. (Five year renewal enclosed.)*

(This, incidentally, is the only letter we have received to date which even questions the advisability of the price increase; we had expected many more.)—Editor

Arbutus

Gentlemen: Perhaps you can tell me whom to contact in regards to pictures, etc., for your magazine, of trailing arbutus. Yesterday I made a special trip and discovered more than I have seen in my whole life. Beds 12' and 15' square. Just unbelievable. I know it's been scarce in late years. If anyone is interested, I would make a date and go with them for field photos. Even the farmer doesn't know it is on his property.

W. Gordon, Central Square

• *It's too late now, but we wish we'd seen it. —Editor*

The happy days

Dear Editor: The bird-decorated copy of THE CONSERVATIONIST was a "bird." Someone demonstrated a great deal of patience and knowhow placing the 68 pictures—a really fine job. And the picture of the spotted fawn was a beauty.

The trout pictured (page 45, April-May) was caught by my brother and weighed 3½ lbs. We were lucky to land him, for all we had for a net was one made of a bent branch and a bandanna handkerchief. Our landing net had been hanging near our rods but some "sportsman" passing through had picked it up.

I miss not being able to get around. Used to be in the Flowed Lands about now. Tried to be there the first day of the trout season. Don't know now when it opens. My oldest grandson is in New Hampshire with an aunt. There is a good brook through their place—nice fishing. Just sent him a rod, reel and all he needs except the worms. Seldom used them myself. If I couldn't get them with a fly, they stayed wet.

Those were the happy days. Didn't mind porcupines and rabbits coming in my tent at night. Lots of deer to watch and once in a while a bear in the distance. One over-size bobcat, no panthers, just one track. Now I have to be satisfied watching a couple of gray squirrels in the back yard.

Hope you get a chance to land a few this Summer.

Almon T. Harding Sr., Plattsburgh

• *And good luck to you.—Editor*

Adirondack Land Map

Dear Sirs: I would like to know what it would cost me if I could get map sections of the Adirondacks in book form, if you should have them.

I have here sections of maps in folder forms that belonged to my father, printed and issued in 1905 when Dewitt C. Middleton was Commissioner. So now I think it is about time for a new map.

Neal E. Clark, Whitesboro

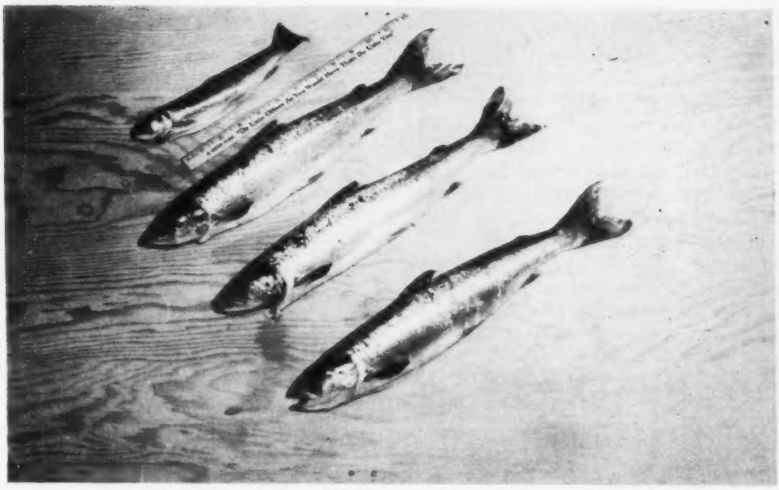
• *We have it—but not in book form. The Adirondack Land Map (in four sections which, when pasted together, add up to a map about 8 feet high and 5 feet wide) was published in 1954 and is available at a cost of $5.25.—Editor*

Doe in trouble

Dear Editor: I took this picture on the Hudson between Beacon and Cold Spring (February 24, 1955, 2 p.m.).

A deer (doe) in a bad situation; not even oars would help.

Michael Kirchberger, Brooklyn



Salmon in the Fulton Chain

Dear Editor: Enclosed is a picture of three salmon along with a nine-inch brook trout and a ruler for comparison purposes.

My good friend, Cliff Becraft, and I were fishing Seventh Lake last week for trout and we were using minnows as bait, still fishing with bobbers. Suddenly it happened—these salmon struck and the fight they put up was magnificent; each of them jumped water three times before being netted. We sure hope you can stock more fish like this in the Fulton Chain!

We were not at all sure about the species we had caught, but since each one measured 16" or a little more we knew we were safe if they were landlocked salmon. What a surprise we got when at Croft's bait house in Old Forge we were told that these were *Atlantic Salmon.* They told us that two years ago 15,000 six-inch Atlantics were put into Fourth Lake as an experiment. This being true, the fish had moved up to Seventh, necessitating a leap over Sixth Lake dam (about five foot high).

Please tell us the whole story on this Atlantic Salmon stocking—we're all for it!

Arthur Emery, Frankfort

• *Knowing very little about Adirondack salmon, we forwarded this to the character who knows most. He answered as follows:*

This is an excellent photograph, and the fish are definitely Atlantic Salmon. Experimental plantings of 2½-inch yearling Atlantics were made from our own hatchery May 5, 1953 in the Fulton Chain. It is probable that the origin of these three salmon was the 1953 plant in Bottle Brook (tributary 8 of 7th Lake, 750 fish), Wheeler Brook (6,500 fish) or High Rock Pond outlet (the inlet to 7th Lake, 200 fish).

Output of salmon of 6-inch size being limited, the alleged stocking of 15,000 six inch salmon is incorrect. However, it was possible recently to put about 3,000 large yearlings in Fourth Lake as an experiment.

The information and photograph given by Mr. Emery are very useful, for we are much in need of definite information in this Fulton Chain experimental stocking.

Although salmon stocking has now been completed for the Spring season, we definitely plan to plant tributaries of Seventh Lake this Fall.—John R. Greeley

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Now the day is over

Good Morning Gentlemen: We would appreciate it if you would send us a price list of any publications that you may have for distribution relative to forest products, especially reforestation.

Thanking you in advance for your usual careful attention, with a barrel of good wishes.

J. R. Williams,
President, Hardwood Dimension Corp.,
Sherwood, Tennessee

• *Publications list enclosed. Good night. Sir. —Editor*

Christmas Trees

Gentlemen: In your October-November issue you had an article about raising Christmas Trees in which you mentioned a new organization formed by the growers. The New York State Christmas Tree Growers' Association.

Since I am very much interested in doing something like this by setting out some trees, I would very much like to have their address.

Walter L. Meseck, New York

• *Mrs. Bert A. Drake, Secretary, 1255 Howard Road, Rochester 11, N.Y.—Editor*

Planning for the future

Gentlemen: I note the advance in price of our CONSERVATIONIST, The 5¢ segar is now 10¢, so it may seem reasonable to double the price of the magazine—'though I think $1.50 would have been better. However (I'm 80) I can't plan for more than 20 years ahead, so it's taking no chance at all to send $5 for the renewal for the next 5 years.

Harold H. Bayliss, Pleasantville

(Continued from page 31)

recent development; there are many known sources of disappointment in results, and probably many more that are unknown. But many persons and groups who have had to put up with the scourge of blackflies, and who find that their business as well as their general wellbeing can be improved by blackfly control, have thought it worth the gamble, and have had their hopes at least partially fulfilled as a result of well organized and properly executed programs. We feel sure they will want such programs to continue.

Paradox Lake
Blackfly Control Experiment

AS Dr. Collins has stated in the accompanying article, resort sections such as the Town of Webb gain considerably from a blackfly control program in the form of added business during the early Summer months. And some logging and pulpwood operators are interested in blackfly control as a means of improving woods working conditions and thereby encouraging workers to remain on the job during the blackfly season.

To be better advised in this matter, and due to uncertainties pertaining to a small control operation, the Bureau of Forest Pest Control succeeded in securing the co-operation of Dr. Collins in making a small area control experiment. In accordance with the procedure outlined by Dr. Collins in his article, it was decided to spray an area eight miles square around the Paradox Lake State Public Campsite in Essex County. This particular campsite was selected for the experiment due to reports from our Foresters (and others) concerning excessive populations of blackflies in the area.

Pre-spraying checks of the streams in the vicinity of Paradox Lake Campsite revealed that there was a very large number of blackfly larvae present. The eight-mile-square area was sprayed by one of our Bureau aircraft on April 20. Post-spraying checks of the same streams showed a considerable reduction in larvae in most streams.

It is the intention of this Bureau to apply two more sprays to this area, one about the middle of May and the other late in May. Additional checks of streams in the area will be made as required to determine the results of the experiment. But a final report on this project will have to be made at a later date—following completion of all spraying and stream checks.

—C. J. YOPS,
Sup't., Bureau of Forest Pest Control

Help!

Dear Sirs: I am nine years old and in the fourth grade. Would you please send me everything from whales to minnows, from lions to mice.

Thank you very much.

Sharon Neuman, Nedrow

• *The Department (especially the Division of Conservation Education and this magazine) receives thousands of requests similar to this every month. Nobody gets the "brush-off;" all letters are answered, usually by sending reprints of articles we have published in the magazine. This sort of thing has gotten to be Big Business here; we believe it's good business, and do our best to make the supply meet the demand.*

But we must ask our subscribers (1). to keep their requests within reasonable limits; (2). to be brief and specific in asking for information; and (3). to bear with us if there is some delay in answering or if the answer seems inadequate. We have a limited staff.—Editor

Birds and books

Dear Editor: The April-May issue of THE CONSERVATIONIST is at hand, and contains several items that seem to call for comment. First, of course, the rise in the subscription price. Anybody who gripes just doesn't know how well off he has been in all the years during which the finest of state conservation magazines was available for a buck. It'll still be a major bargain at two bucks.

The cover and center spread on warblers is certainly attractive, but Wayne Trimm's text is a bit misleading. The emphasis is on migration, and the implication is that these colorful birds are merely passing through New York on the way to some place else. No mention is made of the fact that of the 36 species portrayed, fully 31 are known to nest in New York, some very abundantly. Also there is little justification for including the Connecticut and yellow-throated warblers among "the Spring warblers that normally occur in New York State." The Connecticut warbler is a fairly common Fall migrant in some parts of the State, but the sharp-eyed bird-watchers of the New York City region have detected it only about 20 times in Spring, and there are less than half a dozen Spring records for the rest of the State. As for the yellowthroated warbler, it has been collected, to my knowledge, on four occasions in New York, and there are perhaps fifteen good sight records, to be generous about it. Hardly a "normal" Spring warbler in New York!

I'd also like to comment on two letters in the April-May issue. First, that of Dr. Newell R. Washburn of Endicott, who complains that the attitude of THE CONSERVATIONIST is slanted too heavily toward production of fish and game for sportsmen and slights the "true conservationist." Dr. Washburn doesn't know how well off he is. Let me suggest that he examine, as I have many times, the magazines published by the conservation departments (usually called "Fish and Game Departments") of some of the other states. If Dr. Washburn thinks that sportsmen's groups dominate the Conservation Department in New York, he would find that they have a stranglehold elsewhere.

My other comment is on the letter from Richard V. Upjohn of New York, who doesn't think Cook County, Illinois has forest resources worthy of a Forest Preserve District. Having been raised in New York City myself, I think I know what's throwing Mr. Upjohn off. New York City includes within its borders no less than five full-fledged counties. However, I think this is probably a unique situation among the large cities of the U.S. I passed through Cook County, Illinois on my vacation last Fall, including parts of the Forest Preserve, and can assure Mr. Upjohn that there is a lot more to Cook County than just Chicago. I was well within Cook County when I stopped to pick up a road-killed Franklin's Ground Squirrel just opposite a good-sized poultry farm. As a matter of fact, Allegheny County, Pa., which includes Pittsburgh and 127 other communities, still has over a quarter of its acreage in forest.

Kenneth C. Parkes,
Carnegie Museum, Pittsburgh, Pa.

• *Thanks. As to the warblers, we tried to portray all that might be seen in New York, and we deliberately included the rare ones. The use of the phrase "normally seen" was, we concede, unfortunate.—Editor*

Cannonsville Dam

Dear Editor: I have a friend whose home used to be Cannonsville. She told me that when she was in high school (about 45 years ago) she saw some men surveying land there. She asked her teacher what the men were surveying. He told her that was a good question and suggested that she write to ask her Senator. She did, and the Senator answered and told her they were surveying to build a dam for water for New York City sometime in the future.

She didn't keep the letter (and is sorry now) but I think it is interesting.

Mrs. E. I. Greene, Tuxedo Park

A substantial boost

Dear Sir: Enclosed is a list of thirty names, junior and senior high school students who participated in the essay contest sponsored late last Fall by the National Wildlife Federation, and co-sponsored by the State Conservation Council and local County Federation.

Our original County program listed three cash prizes in the senior and junior divisions, and five honorary awards consisting of a one year's subscription to THE CONSERVATIONIST in each division. However, at the judging someone passes the remark that THE CONSERVATIONIST subscription was far more valuable than the top cash prizes, which consisted of five dollars each. When this remark reached the Federation delegates they immediately voted a one year's subscription to *all* contestants. Thus you have won yourself 30 new members.

John F. Woodhull, Councilman,
Chemung County Federation of
Sportsmen's Clubs

Winter phenomenon

Dear Sirs: On a still, cold morning this last February, I observed a tall, white column in the bed of a small iced-over running stream on my property. Upon investigating I found it to be about 6 feet high and 10 inches in diameter. The column was a delicate thing of ice, hollow inside, wherein froth bubbled up to the top and immediately froze.

I wonder how many readers have observed a similar spectacle on Winter streams.

John Decker, Penfield

Shave, haircut, and conservation

Editor: Enclosed you will find one dollar ($1) in cash for which please enter a subscription to THE CONSERVATIONIST to be sent to: The Fishkill Barber Shop, Fishkill, New York.

I would like to suggest to all readers who are interested in promoting THE CONSERVATIONIST that a good piece of advertizing can be achieved by donating a subscription to their favorite barber shop.

Robert S. Souers, Fishkill

Tennanah Lake

Dear Sir: When in Sullivan County for a funeral last December I saw THE CONSERVATIONIST for the first time. I expressed such pleasure with it that a friend of mine subscribed to it for me and the first issue, the February-March number, arrived yesterday.

As if to welcome me among its readers, this issue brought me the full page map and description of Lake Tennanah. This was the lake where, as a boy, I first learned to fish. And I caught my first trout in its outlet, Trout Brook.

Quinlan's "History of Sullivan County" calls this lake Long Pond. It was renowned for its huge brook trout. Someone introduced pickerel, yellow perch, sunfish and smallmouth bass and that was the end of the trout. I was in a boat one day in 1905 when a ten-inch brook trout was landed. I believe that is the last reported caught in that lake. It is a shame that the lake was not cleared and trout restored, as this lake is spring fed, cold and an ideal trout lake.

William Hones, Colonel, U. S. Army,
Mathews Co., Virginia

Upper Chateaugay

Dear Editor: In the February-March, 1955 issue there is a picture which is a reproduction of one of the Currier and Ives prints, the original of which was painted by Mr. A. F. Tait. This picture bears the title, "Trout Fishing on Chateaugay Lake," and shows a man fishing through the ice and apparently catching trout.

My grandfather, Darius W. Merrill, was the first settler at the Upper Chateaugay Lake, and he built his first cabin there in 1855. I was brought up at Chateaugay Lake, and referring particularly to the years 1887 to 1900, we used to fish through the ice winters and we baited our holes but we never caught any brook trout or what we used to call salmon. We did catch a lot of what were called by local residents "white fish."

When I was a youngster, we had a lot of brook trout that would run anywhere from 6" (which was the legal limit at that time) to 15" and 18" long, the largest of which weighed 1¼ or 1½ pounds, and we used to troll in the Spring and catch a lot of salmon that would run anywhere from three pounds to ten or twelve pounds as an average, although I remember my grandfather catching one that weighed over twenty pounds.

When my grandfather settled at the Upper Chateaugay Lake in 1855, the Indians were still there and there were very few game laws. However, my grandfather would never let anyone hunt deer in the Spring or fish for trout in the Fall. He was a very good friend of Professor Agassiz of Harvard University and he sent Professor Agassiz one each of every kind of fish, fowl and animal that was native there.

A. D. Merrill, Watertown

Wollastonite

Gentlemen: I was reading the article "Mining and Prospecting in New York" in the February-March, 1955 issue. I came across several references to wollastonite and the fact that N. Y. has the only commercial source of this mineral in the world. I referred to several chemical handbooks and an encyclopedia and found no more information than its chemical formula. I am very much interested in rocks, minerals, and mining and would like to know more about this mineral.

Please send me some information regarding the location of the mine, mining methods, and the use of wollastonite.

Michael Gochfeld, Peekskill

• *Wollastonite, a white calcium silicate, is mined from open pits about 2½ miles west of Willsboro, Essex County. The producer is Cabot Minerals, a division of Cabot Carbon Company, Willsboro, N. Y. After mining and careful milling into various commercial grades in the company's plant at Willsboro, the wollastonite is used for a variety of ceramic bodies and glazes, as a paint extender pigment, and as a paper coating pigment.—J. J. Prucha*

Credits

First, second covers, pages 20, 21, P. W. Fosburgh; 3, Roy Irving. Soil Conservation Service; 4, S. C. S.; 6, 22, 24, 25, 26, H. Wayne Trimm; 8, 9, Douglas Payne, Department Extension Teaching and Information, Cornell; 11, J. D. Gould; 12, 18, 39, Irving; 14, 15, Irving, Nick Drahos; 16, N. Y. S. Museum; 17, fourth cover, Homer D. House; 27, William G. Bentley; 28, 29, Ellen Edmonson; 30, Fred Everett; 31, Donald L. Collins; 32, Earl McGuirk; 33, John C. Poole; 35, Irwin M. Alperin; 37, third cover, Clayt Seagears.

Cat Mountain tower

Dear Sir: I enclose herewith a picture of the Cat Mountain Fire Station as it was in 1910 when I was the first observer there. My wife and I were then recently married and just out of college and I was given the job by the old Forest, Fish and Game Commission, some of whom knew me as a native of that region. We lived in a tent from about July 1st to about November 1st, 1910. There were no wooden structures there then except the fire tower and the little shingled box enclosing the telephone.

Arthur Muir, Syracuse

The Inside On The Outdoors Series

THE WOOD DUCK-Nominee

VIRTUALLY every state has an official flower, tree and bird. There seems to be no special reason for this sort of thing except that it's nice to know what's what in the formal outdoors symbol department. A whole lot of people seem to take it for granted that New York also has these things and they write us to find out what they are. The trouble is we do not have them. Sometimes it takes a lot of writing to explain why not.

So we *should* have them, if for no other reason than it would be a lot handier to answer inquiries with three names, two commas and a period. Like, for instance, Massachusetts can: Elm, chickadee, Mayflower. Or Pennsylvania: Hemlock, ruffed grouse, daisy. And Oklahoma (which *really* has something there): Redbud, scissor-tailed flycatcher, mistletoe.

The 1955 Legislature voted us an official flower—the rose, any kind. But nothing formal ever has been done about a tree or a bird.

The sugar maple for a half-century has had some degree of recognition because a group of school children once said they liked this tree best. They even by-passed the Christmas tree. Even less status has the bluebird despite the fact that it often erroneously is listed as New York's legal choice.

Anyway, now that the official ice has been broken by the rose (presumed to be some hardy variety), the naming of a tree and a bird logically should follow.

Vermont long ago recognized the sugar maple. And so did West Virginia and Wisconsin. So there's plenty of precedent to join the parade if we want to. However, it's not the intent of THE CONSERVATIONIST at this time to suggest a tree. But we do presume to nominate a bird.

We certainly have nothing against the bluebird. The states of Idaho, Missouri and Nevada have considered this sprightly little guy good enough for them.

Other birds already claimed officially are the flicker, cactus wren, Carolina wren, mockingbird, brown thrasher, blue hen chicken (and we hope our Delaware friends will write in to give us the scoop on *that* one), lark bunting, valley quail, bobwhite quail, ring-necked pheasant, wood thrush, hermit thrush, robin, cardinal, goldfinch, western meadowlark, chickadee, Baltimore oriole, purple finch, roadrunner, brown pelican and sea gull.

Seven states give the cardinal the popularity prize while six like the western meadowlark and five favor the mockingbird.

But none has staked out a claim on the wood duck which we consider next to the top bird on the totem—under the national eagle of course. There are many reasons for this preference.

The wood duck is among the most spectacularly beautiful of all birds. But beauty being only feather deep, our choice must have a lot more on the ball—and it certainly does.

It has no singing voice like the mockingbird or the brown thrasher. But it produces a musical hoo-eek (THE CONSERVATIONIST, *April-May*, '52) that thrills every outdoorsman who recognizes the source.

It certainly isn't fast on its feet like the roadrunner or pheasant. But its mile-a-minute dodging flight through the trees and the female's unerring, bullet entry through the portal of her nest are marvelous maneuvers to behold.

Even the wood duck's kids are something special—among the most precocious of all. A few hours after hatching, the whole brood often jumps as much as 50 feet from high nest to the ground and scurries over logs on the way to water with the agility of chipmunks. Then they immediately dart forth upon the surface as though they had been taking swimming lessons from a loon for a month instead of having just spent those 31 days sloshing around in eggs.

All this applause for the physical wood duck is small potatoes, we think, alongside the main reason for nomination of this versatile dandy. To understand this, it's first necessary to dig out statistics.

In 1900, many ornithologists believed the wood duck on the verge of extinction. In 1902, New York gained a law which stopped Spring shooting. But New York stood almost alone with its breeding season ban on the gun. The migration lanes still held more hazards than the traffic of North-bound waterfowl could bear.

In 1905, the wood duck was recorded as very rare in the Adirondacks. The species barely held its own until 1911 when New York banned the sale of wild-killed game. That lifted the pressure of the market hunter. But not until two years later did the wood duck pass the danger line. It was then that the Federal migratory bird law was enacted and the woodie gained complete year 'round protection through the Nation.

Even so he hovered on the brink for many years. About 1935 biologists began to learn why this normally prolific and wholly protected bird was so slow to stage a comeback. The main reason was attributed simply to the scarcity of suitable nest sites near water. This bird, you know, normally nests in holes in trees—often old woodpecker holes. Man apparently had been cutting down those trees too fast in too many places.

Then it was demonstrated that wood ducks would nest readily in man-made boxes—like that pictured on the opposite page. And soon much of the problem was solved. Sportsmen's clubs found the nest box project made to order. It was easy to produce quick and obvious results. Youth organizations, school nature groups, camps joined the parade of box-makers. Conservation Departments turned them out by the thousands. Scores of experiments were conducted to design a better box.

The wood duck then zoomed into such safe levels of abundance that the Federal government (which regulates the hunting of all migratory game birds) was able to take it off the protected list, within certain limits.

And now comes the era of the farm pond and the artificial wildlife marsh. These vast strings of new shore and water communities are made to order for the wood duck. Given nest boxes, pairs usually move in the first Spring (often at a density of one pair per acre) bringing a new and fascinating interest to the pond's owner and solidly contributing to the values of what probably was once an unproductive place.

SO the wood duck literally has hammered home the lesson that Man *can* do something to restore and maintain a renewable natural resource, despite an annual harvest, *provided* many hands go to work with adequate know-how. And it is surprising how those nest box projects have led the interests of so many to other productive conservation work.

Certainly it took a spectacular bird to catch man's interest in the first place. And it took one which would respond to his help quickly and substantially by sending him large orders of downy little thank-you letters with webbed feet.

We hope sufficient public agreement can be reached, come the 1956 session of the Legislature, to drop a bill in the mill making *aix sponsa* (the bride) official avian symbol of the Empire State. Thus we could help repay, at least, the wood duck's gift to us.

—CLAYT SEAGEARS

"HOW ARE THINGS GETTING ON IN THERE?"

(Male Wood Duck on nest box)

LOW OR PASTURE ROSE *(Rosa virginiana)*
(Courtesy N. Y. S. Museum)

It's official now. The rose—in any color or combination of colors common to it—is the official flower of New York State. Governor Harriman has signed the bill giving official status to the rose. The bill was co-sponsored by Assemblywoman Mildred Taylor of Lyons, Wayne County and Senator Dutton S. Peterson, Odessa. Unofficially the rose had been considered the State flower ever since school children in 1891 selected it.

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